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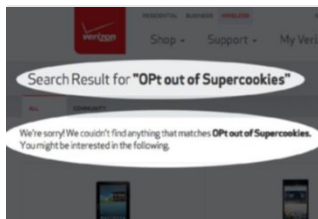
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HELP KEEP THESE KIDS IN PLAY.

**175,000 KIDS WILL BE
DIAGNOSED WITH
CANCER THIS YEAR.**

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Let's be their greatest hope too.

Cancer strikes infants and children. For teens
and young adults, survival can depend on
treatment by a pediatric oncologist, designed
specifically for them.

The St. Baldrick's Foundation and Stand Up To
Cancer are funding groundbreaking collaborative
research to bring the most effective therapies to kids
fighting cancer. To learn how you can help keep
these kids in play, go to stbaldricks.org/inplay and
standup2cancer.org/pediatrics.

Julia Hernandez
Diagnosed at 16,
in remission.

Samuel L. Jackson
Stand Up To Cancer and
St. Baldrick's Ambassador



**St. Baldrick's
FOUNDATION**

Conquer Childhood Cancers



St. Baldrick's Foundation is a charitable 501(c)(3) organization funding childhood cancer research.
Stand Up To Cancer is a program of the Entertainment Industry Foundation, a 501(c)(3) charitable organization.

Photo by Nigel Parry

NEWS

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RadioShack: 8 adorable images from the vault

BY JON PHILLIPS

RadioShack first opened its doors in 1921 to serve radio officers stationed on ships in Boston Harbor. On February 5, 2015 RadioShack filed for bankruptcy (go.pcworld.com/radioshack).

We hate to see our beloved nerd emporium shut its doors. Sure, the retail chain may not be relevant today, but for decades it epitomized consumer electronics. Intrigued? Then join me on a tour of vintage RadioShack moments.

The Early days

The image above was shot in 1931 at a store in Boston. Then as today, customers visited RadioShack to listen to audio equipment before making a purchase.

Listen to this

RadioShack says it invented the in-store audio equipment listening experience—a service that pure audiophile shops adopted many years later.

Here you see the audio room of a RadioShack location in Boston (year unknown). Notice the two turntables beneath the wall of amplifiers. It appears switching equipment in the middle of the two turntables lets the clerk demo different amplifiers at will.



The primordial makers movement

Yep, RadioShack has been selling educational science and electronics kits since the days when all men were required to wear hats by federal law.

The sign on the left reads, “Each kit chock-ful of electronic parts and instructions!” I’m guessing this photo was shot sometime after 1958, as the “record store” kiosk in the upper right of the photo is advertising a recording of the original Broadway cast of the *The Music Man*.





Science!

You have to love the branding on this Braintree, Mass. storefront circa 1961. At this point America was still celebrating the “friendly atom.”

You probably couldn’t buy the now-infamous Gilbert U-238 Atomic Energy Lab (go.pcworld.com/gilbert), but RadioShack sold other science kits, and of course the atom icon in the store logo spoke to general electronics. Today, RadioShack remains one of the few brick-and-mortar retailers that keeps electronics parts in stock.

We seriously doubt Sprint will continue that tradition if it buys half the stores.

Let’s do some A/B testing

Look how far the “audio room” experience has evolved since 1931. This photo was shot in 1961 at a RadioShack location in Stamford, Conn. We see vinyl on the bottom, amps and turntables in the middle, and speakers on top.

But how in the world did an all-in-one Windows PC make it into this environment?! Or how else would you explain what’s going on behind the two turntables in the middle of the photo?



A groovier day and time

I don't know much about this photo. RadioShack didn't share when and where this image was shot. But judging from the storefront, it was probably photographed around the time when Peter hit Marcia in the face with a football.



We speak TRS-80 here

This image speaks volumes about the birth of the personal computer revolution. In 1977, RadioShack rolled out the TRS-80, a 1.77MHz machine that cost \$600 a pop (that's about \$2,300 in today's money). The "Tandy/RadioShack, Z-80 microprocessor" would give about 200,000 Americans their first experiences with PCs, and apparently meant so much to RadioShack's business, this store was branded a "computer center."

Note the "Sign Up for Lessons" invitation in the store window. This store's grand opening was in 1980.

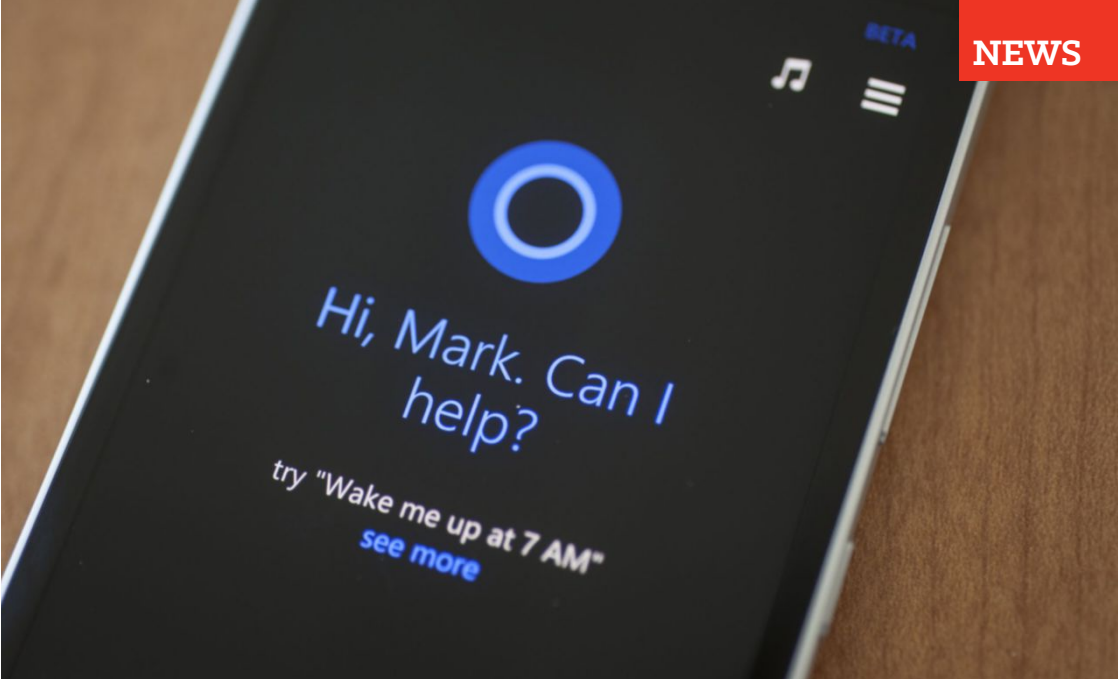




This is a radio, not a piece of NASA equipment

Imagine: In 1980, high-end radios were called “receivers.” They cost hundreds of dollars, and in most cases you needed to pair them with amplifiers—which cost their own pretty pennies—in order to integrate them with home stereo systems.

Today, we just stream radio over our mobile phones. 🔌



After Windows 10, Cortana may cozy up to Office

BY BRAD CHACOS

MICROSOFT'S DIGITAL ASSISTANT isn't content to conquer Windows Phone and Windows 10: Cortana is a-coming to Office, too.

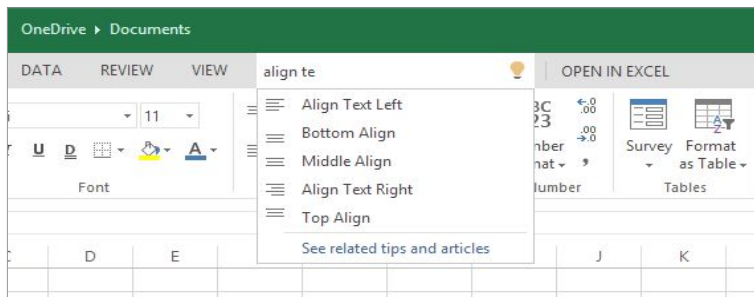
That's according to *The Verge*'s Tom Warren (go.pcworld.com/verg), who went digging after the folks at *WMPowerUser* (go.pcworld.com/wmpu) discovered an odd Work Assistant app in the Windows Phone Store, locked down to internal Microsoft beta testers alone.

The Work Assistant app is a prototype that can be used to open, edit, and share documents via voice commands and Cortana, Warren reports. Apparently the end intention is to integrate Cortana fully inside of Office on phones, tablets, and PCs. Microsoft recently announced that Office 2016 will ship later this year, and released a preview of touch-capable Office apps (go.pcworld.com/16preview),

ahead of an official launch closer to the release of Windows 10.

The story behind the story: *ZDNet*'s Mary Jo Foley (go.pcworld.com/zdnetfoley) reports that the Work Assistant app is being developed by the Applications and Services group under the watchful eye of executive vice president Qi Lu, chief experience officer (and former Windows co-chief) Julie Larson-Green, and Bill Gates himself. Those are some big names for a mysterious prototype app, which lends credence to Warren's report.

Warren and Foley are extremely reliable Microsoft reporters, and the duo that first broke the news of the Windows Blue update that eventually became Windows 8.1.



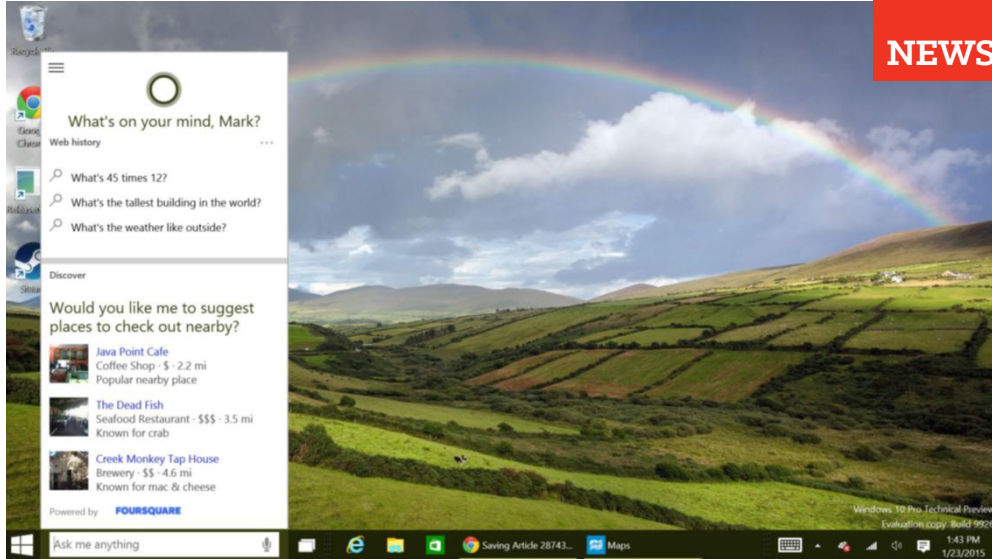
Tell Me in action in Excel Online. It sits in the middle of the Ribbon interface, saying "Tell me what you want me to do."

Cortana as avatar

If Cortana landed in Office, it would actually tie together multiple loose threads for Microsoft.

Beyond the apparent desire to make Cortana central to all Microsoft's major platforms, integrating voice commands and natural language searches continues a relatively recent addition for Office. In 2014, a handy 'Tell Me' toolbar appeared in Office Online, giving you the ability to search for features using natural language. Given how deep (and occasionally obtuse) Office can be, it's a huge help—and it's easy to see how Cortana's Bing-powered brains could improve the situation even more, especially on mobile devices.

And if Cortana's voice controls in Windows 10 become popular, people could quickly get used to barking commands at their PCs.



(Though I'll believe that when I see it.)

Next, if Microsoft continues its newfound cross-platform push, integrating Cortana into the Office apps for Android and iOS would let the assistant slip into competing platforms while still leaving her full capabilities a Windows ecosystem exclusive. Remember: Larson-Green told reporters in November (go.pcworld.com/november) that Cortana will eventually wind up on other operating systems in some ways.

Finally, the whispers of Bill Gates' involvement with the project perks up our ears, because this report comes a mere week after Gates told Redditors (go.pcworld.com/gates) that he's involved in some sort of "personal agent" project within Microsoft.

"One project I am working on with Microsoft is the Personal Agent which will remember everything and help you go back and find things and help you pick what things to pay attention to. The idea that you have to find applications and pick them and they each are trying to tell you what is new is just not the efficient model—the agent will help solve this. It will work across all your devices."

Assuming this all proves true, here's hoping Cortana manages to be less annoying than Clippy when she winds up in Office. She already holds interesting conversations (go.pcworld.com/convo) on Windows Phone—but only when you go out of your way to ask for her input. 🔌

Cortana in
Windows 10
helps plan a
day out.



Microsoft reimaged: Satya Nadella's first year as CEO

BY BRAD CHACOS

THE MICROSOFT OF today is not the Microsoft of yesterday. Embrace, extend, extinguish? That's all gone, replaced by a new era of openness and collaboration. The Windows 8 debacle? It's quickly being forgotten thanks to the far more palatable Windows 10.

It's truly a new era at Microsoft, and the catalyst for the transformation was a singular event: Satya Nadella's appointment as CEO one year ago today. Sure, not all of the major events that occurred on his watch began on his watch—Windows 10 has been in the works for a while—but it's nevertheless been a year swelling with a sea of changes.

It remains to be seen whether the reimaging of Microsoft will pay off. But one thing's already certain: Nadella's reign is off to a rocking start.

Office for iPad

Nadella pledged that Microsoft would become a “mobile-first, cloud-first” company on his very first day in office. He quickly kept that promise by revealing a long-rumored, long-awaited unicorn: Office for iPad.

Though the software was obviously developed under Steve Ballmer’s eye, its release started the Nadella era with a bang. Office for iPad rocks (go.pcworld.com/rocks), as did the subsequent Office for Android release (See our hands-on review on page 71). Touch-friendly Office apps for Windows? We’re still waiting for those. Releasing Office on competing platforms first would never, ever have happened under previous Microsoft regimes. And get this: Earlier this year, Microsoft made all mobile Office apps completely free to use in basic form. Wow.

Windows goes free

But the freebies didn’t end there. At Microsoft’s annual Build developer’s conference in April 2014, it was announced that Microsoft would hand free Windows licenses out for Windows Phones, small tablets, and Internet of Things-style devices. In a world where no other major consumer operating system costs money, the announcement

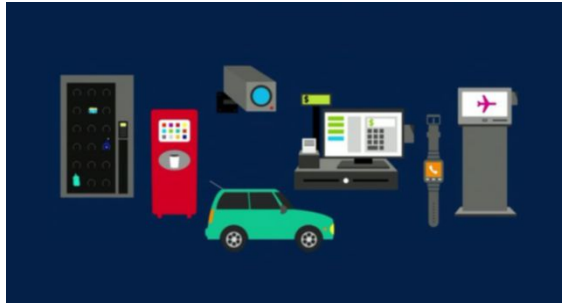


shouldn't have come as a shock. Yet it still was a surprising jolt—giving away Windows for free? This clearly wasn't Ballmer's Microsoft any longer... and this announcement foreshadowed similarly momentous pricing details for Windows 10, many months down the line.

Windows for IoT

At the same Build conference, Microsoft announced plans for an all new version of Windows—one built for the simultaneous rise of smart devices and the tinkering-obsessed enthusiast/maker scene. This is Microsoft's ploy to get ahead of the next billion connected devices after pretty much completely missing the smartphone revolution.

Windows for the Internet of Things (whew, that name!) will be absolutely free when it's released, and it's clear it will support both Intel and ARM chips, as it's been announced for Intel's Quark-powered Galileo boards and the ARM-powered Raspberry Pi 2 alike.



This is Microsoft's ploy to get ahead of the next billion connected devices after pretty much completely missing the smartphone revolution.

Microsoft reimagined

Seizing the momentum, Nadella announced a more refined guiding light for Microsoft. Whereas Steve Ballmer dreamed of becoming an Apple-like devices and services company—even going so far as to spend \$7 billion on Nokia to advance the goal—Nadella sees Microsoft as a platform and productivity company with a mobile-first, cloud-first focus. “We help people get stuff done,” he said in a manifesto.

The results of that refinement have been clear throughout Nadella's first year: in Office for iPad, in the introduction of universal Windows apps, in the cross-device design of Windows 10, and the

release of a slew of Microsoft apps for iOS and Android. Nadella's Microsoft is walking the talk.

Xbox defined

In the same manifesto, Nadella made clear that despite calls from some analysts, he has no intention of spinning off Xbox. "The single biggest digital life category, measured in both time and money spent, in a mobile-first world is gaming," he wrote. "We are fortunate to have Xbox in our family to go after this opportunity with unique and bold innovation."

That devotion appears well-placed. In the months since, close ties were forged between Windows 10 and Xbox One, and if Windows 10 allows you to stream PC games to your TV—as Microsoft is exploring (go.pcworld.com/polygon)—it could kill the Steam Machine threat before it truly gets started. Nadella's Microsoft also dumped the Xbox Live subscription requirement to use entertainment apps, and bought Minecraft maker Mojang for \$2.5 billion.



Nadella made clear that despite calls from some analysts, he has no intention of spinning off Xbox



The death of Scroogled

One element of the Ballmer era quietly died on Nadella's watch, however—the contentious, Scroogled campaign. The Scroogled websites were quietly redirected to a tamer "Why Microsoft?" website sometime around the end of 2014. Good riddance. The mean-spirited Scroogled campaign harked back to the vicious 1980s-era Microsoft, and its tone clashed with Nadella's calls for calm and collaboration.

Turbulence

Not all was rosy in Nadella's first year as Microsoft's CEO, however. He announced the company's largest-ever job cuts in July 2014 (go.pcworld.com/largest), axing a whopping 18,000 employees—including a full half of the new Nokia hires. Ouch.

In October 2014, Nadella drew fire for saying that female employees should essentially trust the system and not ask for raises in the workplace (go.pcworld.com/dontask). Nadella quickly walked back on the issue in an email to employees (go.pcworld.com/email), saying “Without a doubt I wholeheartedly support programs at Microsoft and in the industry that bring more women into technology and close the pay gap. I believe men and women should get equal pay for equal work.”

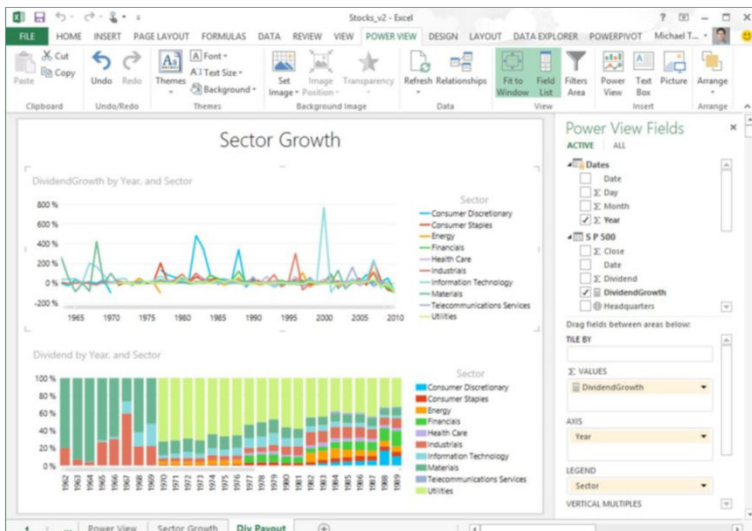
Winning back the workplace

Nadella's Microsoft made sure to keep other workplaces smiling in 2014, introducing a slew of new tools targeting enterprise users.

The Power BI “business intelligence” tool for Excel shipped just six days into Nadella's reign—thanks Steve!—and was later updated with

PowerBI's Power

View enables multiple charts and graphs to be displayed side by side.



mobile apps and a free tier. Last September, the new Delve tool (go.pcworld.com/delve) was integrated into Office 365 for Business, helping organizations save time with contextual relevancy that surfaces the right information at the right time. A fresh, fun, and free new Office app dubbed Sway (go.pcworld.com/freesway) hit preview in November, bringing a sense of simplicity to the oft-complex productivity suite. But the biggest bone Nadella tossed to corporations may be the same one tossed to irritated consumers...

Windows 10

Windows 10 is shaping up to be everything Windows 8 should have been, and the culmination of many years of hard work at Microsoft. While Windows 8 played at it, Windows 10 truly unifies the operating system across far-flung device types, while simultaneously adjusting the interface to best fit each device type—something Windows 8 failed abysmally at. A returned Start menu and windowed Windows apps should make PC users feel more comfortable. Cortana, deep Xbox integration, universal Windows apps, and a slew of other improvements tie Windows 10 deeply into Microsoft services, making it more platform than standalone OS—for better or worse. And you can try it today (go.pcworld.com/try)!

Even better, Windows 10 will be a free upgrade for current Windows 7 and 8 users (but not businesses). Which makes sense.

HoloLens

WTF. Microsoft's radical augmented reality system is utterly amazing (go.pcworld.com/amazing)—and it came out of left field. 🚀



With an eyeshade surrounding it, the HoloLens looks like something the Daft Punk duo might wear.

Hackers are unknowingly gathering intel for the NSA

BY LUCIAN CONSTANTIN



THE U.S. NATIONAL SECURITY AGENCY and its intelligence partners are reportedly sifting through data stolen by state-sponsored and freelance hackers on a regular basis in search of valuable information.

Despite constantly warning about the threat of hackers and pushing for their prosecution, the intelligence agencies of the U.S., Canada and the U.K. are happy to ride their coattails when it serves their interests, news website *The Intercept* reported (go.pcworld.com/intercept).

“Hackers are stealing the emails of some of our targets... by collecting the hackers’ ‘take’ we 1) get access to the emails ourselves and 2) get insights into who’s being hacked,” a page from an internal wiki used by the agencies reads. The page (go.pcworld.com/page), last modified in 2012, was among the files leaked by former NSA contractor Edward Snowden to journalists and was published by *The Intercept*. One such cache of stolen data is known internally

to the Five Eyes alliance—the intelligence agencies of the U.S., Canada, the U.K., Australia and New Zealand—under the code name INTOLERANT.

“INTOLERANT traffic is very organized,” the leaked wiki page reads. “Each event is labeled to identify and categorize victims. Cyber attacks commonly apply descriptors to each victim—it helps herd victims and track which attacks succeed and which fail.”

The victims whose data was pilfered by hackers and is part of INTOLERANT includes: Indian diplomatic missions and navy; Central Asian diplomatic missions; Chinese human rights defenders; Tibetan pro-democracy personalities; Uighur activists; the Tibetan government in exile, the European Union Special Representative for Afghanistan and Indian photo-journalists.

Some of these victims coincide with those targeted in state-sponsored malware attacks previously reported by security firms and believed to be of Chinese origin (go.pcworld.com/attacks).

Analysis of the INTOLERANT data points toward a likely state sponsor based on the level of the hackers’ sophistication and victim set, the leaked wiki page says. In addition to gathering information from data stolen by black-hat hackers, the Five Eyes agencies also monitor security researchers on Twitter and blogs as part of what’s known as open-source intelligence or OSINT collection.

A program code named LOVELY HORSE that was created by the U.K.’s Government Communications Headquarters monitors a long list of Twitter feeds, including those of high-profile security researchers Tavis Ormandy, Alexander Sotirov, Dave Aitel, Dino Dai Zovi, Halvar Flake, HD Moore, Kevin Mitnick, Mikko Hyppönen, Mark Dowd and the Grugq.

Evidence of the NSA and its partners hijacking botnets and the cyberespionage efforts of foreign intelligence agencies was also revealed in a report by German news magazine *Der Spiegel* (go.pcworld.com/spiegel) in January that was also based on documents leaked by Snowden. 🔒



Some of these victims coincide with those targeted in state-sponsored malware attacks



This laptop is completely free! Here's the catch

BY CHRIS HOFFMAN

DELL JUST LAUNCHED a sleek new MacBook Pro competitor running Linux, and the freedom-obsessed Purim Librem 15 (go.pcworld.com/purim) laptop blew past its crowdfunding goal. But Richard Stallman's Free Software Foundation doesn't approve of either of these powerful, tightly designed, Linux-running laptops. Instead, the FSF recommends you buy the "LibreBoot X200"—which is actually a refurbished ThinkPad X200 from 2008 (go.pcworld.com/fsf).

That's insane... at least on the surface. But the story isn't quite that simple.

On the one hand, the FSF looks comically out-of-touch by endorsing

this hardware, which spectacularly few people—even hardcore free software geeks—will want to buy. But on the other hand, the FSF is sticking to its guns, and making a good point about how hard it is to get hardware with completely open code.

Only two laptops “respect your freedom,” and they’re both outdated

The LibreBoot X200 is only the second laptop the FSF has ever endorsed. It endorsed the Gluglug X60 laptop back in 2013, saying it was “the first time we’ve ever been able to encourage people to buy and use a laptop as-is.” Both laptops get the FSF’s “Respects Your Freedom” certification (go.pcworld.com/respect).

The Gluglug X60 was a refurbished ThinkPad X60, just as the LibreBoot X200 is a refurbished ThinkPad X200. The ThinkPad X60 is a laptop from 2006, even two years older than the 2008-vintage ThinkPad X200. There’s no way around it: This hardware is just plain dated. The LibreBoot X200 comes with a 2008-era Intel Core 2 Duo P8400, although it thankfully has been upgraded with an 802.11n Wi-Fi card. You can also opt for more RAM and a larger hard drive or solid-state drive. You can buy a LibreBoot X200 (go.pcworld.com/x200) starting from £298.00 (about \$450 US dollars) on Gluglug’s online store. That’s a lot more than you can pick up a used one for on eBay, but you’re paying for Gluglug’s hard work.



The “LibreBoot X200”—which is actually a refurbished ThinkPad X200 from 2008

Why the FSF loves these old ThinkPads

But what did Gluglug do to turn a ThinkPad X200 into a FSF-recommended LibreBoot X200? Well, Windows was replaced with the FSF-endorsed Trisquel GNU/Linux operating system (go.pcworld.com/trisquel). This is the same operating system the Purism Librem 15 promises to ship with—the FSF doesn’t like Ubuntu and its inclusion of non-free software and firmware. Fedora is much more hardcore about free software, and the FSF doesn’t even like Fedora because they ship some closed-source firmware. You can read the FSF’s specific complaints (go.pcworld.com/specific) about various popular Linux distributions, if

you like. But it's not just about the typical high-level software. The low-level firmware on the laptop was replaced. The BIOS and Intel's low-level "Management Engine" and "Active Management Technology" were replaced with the free software LibreBoot BIOS replacement and the GRUB 2 bootloader. The FSF is concerned about Intel's low-level ME and AMT technologies, which can be used to manage PCs remotely and is closed-source. The proprietary firmware could be a security danger (go.pcworld.com/danger), too.

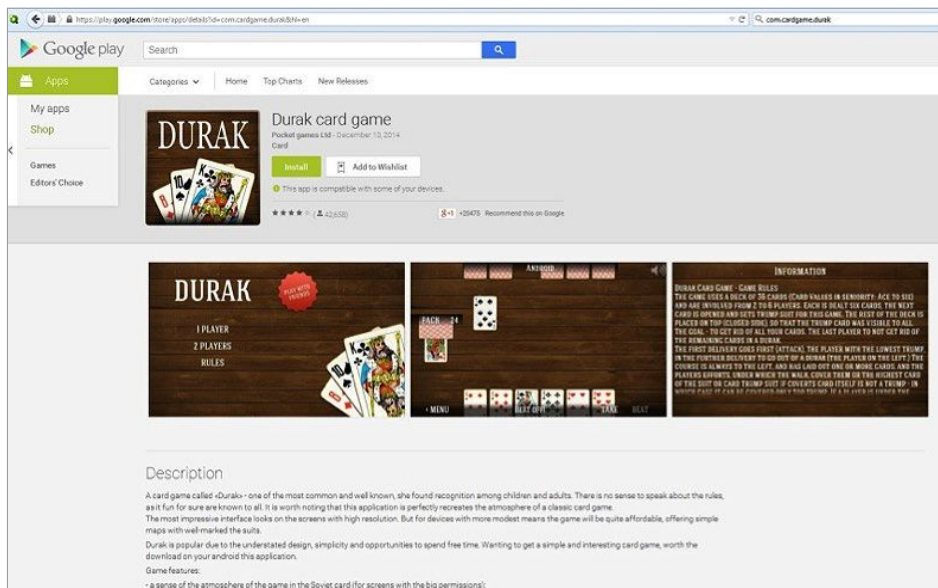
Gluglug's developers spent time reverse-engineering this laptop's low-level firmware, creating free software firmware to replace it, and installing that onto the laptop. You get a laptop with completely free software all the way down. You're free to modify the firmware and install your modifications, if you'd like. That's what's really special about these laptops, especially to the FSF.

FSF endorsement can teach us a valuable lesson

Sadly, the FSF's endorsement of these laptops is irrelevant to most of our lives. Unless you really want to use a CPU made seven years ago, you probably don't want to buy this laptop. There's a reason the Purism Librem 15 campaign decided to allow non-free firmware—otherwise it wouldn't be able to ship with modern hardware. At least Purism seems to be making some progress (go.pcworld.com/progress) on opening up the firmware.

The sheer difficulty of getting a laptop with completely free software running on it is sobering as well as instructive. If you believe in hardware that's customizable, modifiable, and open, so you can do whatever you want with your PC and exert total control over it—and who doesn't like the sound of that?—it's quite tragic that the only options are so dated.

While I criticized (go.pcworld.com/critical) the Purism Librem 15 campaign a bit for glossing over the concerns with closed-source firmware in its quest for an open Linux laptop, I tried not to hit them too hard. The FSF's endorsement shows us why the Purism Librem 15 and other modern pieces of Linux hardware don't have completely open firmware code. Sadly, it'll take more than a refurbished laptop from seven years ago with reverse-engineered firmware to change the industry. 🔌



Scareware found hidden in Google Play apps

BY LUCIAN CONSTANTIN

GOOGLE HAS DONE a good job at keeping data-stealing Trojan apps out of Google Play, but attackers still find ways to monetize rogue apps through the store.

Avast Software researchers recently found three apps on Google Play with hidden adware functionality that was designed to activate days after the apps were installed. The rogue applications—a game called Durak, an IQ test and a history app—had been downloaded millions of times.

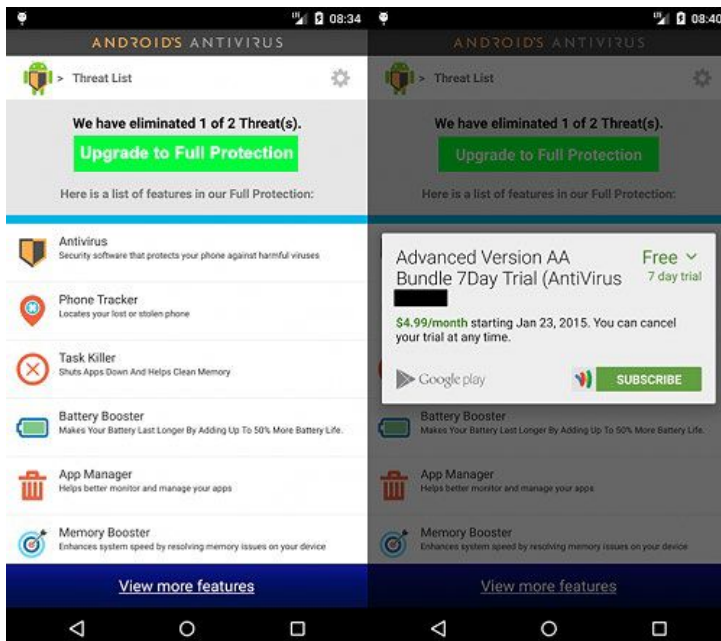
When people first install Durak, it looks and acts like a normal gaming app, Avast researcher Filip Chytry said in a blog post (go.pcworld.com/

blog). “This impression remains until you reboot your device and wait for a couple of days. After a week, you might start to feel there is something wrong with your device.”

Specifically, every time users unlock their phones, the app displays persistent ads claiming the device and its data are at risk.

Users are asked to act, but if they do, they run into real trouble, according to the researcher. For example, they may get redirected to questionable app stores and to apps that surreptitiously attempt to send premium text messages on behalf of the users. People may also

Specifically, every time users unlock their phones, the app displays persistent ads claiming the device and its data are at risk.



encounter apps that collect too much of their information without offering much value.

If this sounds familiar, it's because the scheme is similar to the highly effective scareware scams that have plagued PC users for years by spooking them into installing rogue antivirus programs or system optimization tools using fake warnings.

A clever trick to beat Google

Delaying the warning messages for several days is a clever technique by the rogue developers because users will have a hard time determining which app is responsible for the alerts, and that's assuming they even suspect that the messages are triggered by an app.

Also, apps uploaded to Google Play are scanned inside an Android emulator called Bouncer to observe their post-installation behavior. By delaying the malicious activity, the app authors likely hope to bypass this behavior-based analysis.

"I believe that most people will trust that there is a problem that can be solved with one of the apps' advertised 'solutions' and will follow the recommended steps, which may lead to an investment into unwanted apps from untrusted sources," Chytry said.

In some cases the rogue ads directed users to legitimate security apps that were also hosted on Google Play, probably in an attempt to earn money through referral schemes.

"These security apps are, of course, harmless, but would security providers really want to promote their apps via adware?" Chytry said. "Even if you install the security apps, the undesirable ads popping up on your phone don't stop."

Google has removed the three offending applications identified by Avast from Google Play. However, the incident shows that although Trojans account for most Android malware, other types of threats also lurk on the official app store.

Google confirmed the apps have been suspended but offered no comment about this type of threat nor about how attackers are able to bypass Google Play defenses. 🔒

Make smart purchases,
stay safe online.

CONSUMER WATCH



RESIDENTIAL BUSINESS WIRELESS

Set Location Español ST

Shop ▾

Support ▾

My Verizon ▾

Search Result for "OPt out of Supercookies"

ALL

COMMUNITY

We're sorry! We couldn't find anything that matches **OPt out of Supercookies**.
You might be interested in the following.

Senators call for investigation of supercookie use

Will government pressure influence Verizon's supercookie tracking of mobile subscriber's online activity? The pressure is on.

BY GRANT GROSS

GOVERNMENT AGENCIES SHOULD investigate whether Verizon Wireless' use of so-called supercookies to track the online activities of its subscribers amounts to privacy violations, three U.S. senators said Friday.

Verizon's use of the respawning, hard-to-defeat cookies on its mobile subscribers' phones raises serious privacy problems, said the senators, all Democrats. Senators are considering new legislation to rein in the use of hard-to-delete cookies, said Senator Bill Nelson of Florida.

News reports last year also identified AT&T as using supercookies, but the

company later dropped the activity.

“This whole supercookie business raises the specter of corporations being able to peek into the habits of Americans without their knowledge or consent,” Nelson said in a statement. “That’s why I think we need to get to the bottom of this and perhaps new legislation.”

Nelson, along with Senators Richard Blumenthal of Connecticut and Edward Markey of Massachusetts, asked the U.S. Federal Trade Commission and the Federal Communications Commission to investigate Verizon’s use of supercookies.

Supercookies, in particular, may violate the FCC’s rules and policies related to consumer privacy and transparency, the senators wrote in a letter to the agency.

Nelson said he would rather see consumers have to opt in to tracking.

Opt out on the horizon?

Verizon said it will respond to the senators’ most recent letters. Just last week, the three senators, along with Senator Brian Schatz, a Hawaii Democrat, wrote Verizon a letter asking the company for an explanation of its supercookie program.

“Verizon takes our customers’ privacy seriously,” the company said in response to the new letters.

Last month, Verizon said it would allow customers to opt out (go.pcworld.com/out) of super-cookies. Nelson said he would rather see consumers have to opt in to tracking.

In recent weeks, computer scientist Jonathan Mayer found that online advertising company Turn used Verizon’s supercookies to track the internet activity of the company’s subscribers, even after some had tried to delete the cookies.

Verizon has also published a web page (go.pcworld.com/verizon) explaining the supercookie program. The program, using a Unique Identifier Header [UIDH], “was designed with privacy protections in place—it changes automatically and frequently and it does not contain any customer information,” the company said.

The UIDH is not present on encrypted traffic or when a device is connected through Wi-Fi or Virtual Private Networks, Verizon said. 🔌



Dumb ways users threaten corporate security

BY TONY BRADLEY AND MELISSA RIOFRIO

CORPORATE PASSWORDS FOR sale, \$150 OBO. That, apparently, is how little some employees may take in exchange for compromising their company's security.

SailPoint's Market Pulse Survey (go.pcworld.com/survey), compiled from responses from 1,000 workers from large companies with at least 3,000 employees, offers vivid examples (go.pcworld.com/ex) of how easily one person can create a lot of risk—and why passwords alone are simply inadequate.

The reuse of passwords is particularly alarming. "Employees may have moved away from the post-it note password list, but using the same password across personal and work applications exposes the company," said Kevin Cunningham, president and founder of SailPoint, in a statement.

Sharing passwords with other coworkers is probably seen as a friendly or expedient thing to do. Unfortunately, it makes it much more difficult to contain or enforce password security, or to trace the source of a breach or compromise.

Lax at work, worried at home

While many of the employees surveyed apparently were lax about corporate security, they were cautious about their personal online security. Twenty percent of those surveyed said they'd been the victim of a data

Among SailPoint's Market Pulse Survey participants...



...1 in 7 would sell a corporate password for as little as \$150.



...1 in 5 would routinely share login credentials with other members of their team.

...56% admit to reusing passwords across corporate applications they access.

...14% claim to use the same password for every application.

breach. Ironically, the same proportion (20 percent) said they'd stop doing business with a company that put their data at risk—like maybe their company?—and fully half said they'd tell their friends and family to do the same.

Even on a personal level, individuals routinely make dumb choices when it comes to password security. A recent segment (go.pcworld.com/kimmel) on Jimmy Kimmel Live illustrated exactly why password security is inadequate: People on the street were willing to share information about their passwords related to how they come up with them. One couple revealed they use the name of a pet combined with a memorable date.

The people interviewed didn't blatantly share their passwords, but by sharing relevant details on national television they put themselves at risk. It is not difficult to find out what the name of the person's pet, and then it's just a matter of identifying dates that might be significant, like birthdays or anniversaries.

We hope you wouldn't sell your corporate password to the highest bidder or give hints to help people crack your password. Even if you follow solid password security practices, though, passwords alone are still inherently insecure.

That's why two-factor authentication (go.pcworld.com/two) makes sense. You just have to find the right balance between ensuring your accounts and data are secure, without making access so difficult that it's impractical and unreasonably inconvenient. 🔌



Password

Password Manager Apps for your mobile life

BY LIANE CASSAVOY

SURE, YOU COULD go without a password manager—if you want to try to remember all of your super-secure passwords and log-in credentials on your own, or if you live dangerously and use the same password for all of your accounts. But let's get real: There's no reason to do that, not when there are so many excellent password managers out there that can store passwords securely for you, and generate them, too.

LastPass

LastPass (lastpass.com) has long been my favorite desktop password manager, but I've never been bowled over by its mobile version, available

for Android, BlackBerry, iOS and Windows Phone devices. The desktop version just works: Install it as a browser extension and never worry about remembering a password again. But I always found the mobile version too clumsy to actually be useful, requiring too much back-and-forth between the LastPass app and my mobile browser.

I'm happy to say that things have improved greatly with the most recent version of LastPass mobile. Much of the improvement is thanks to the browser that's built into the LastPass app. While this was, apparently, a feature of earlier versions of LastPass, it was difficult to find. Now, it's prominently presented to you when you open the app.

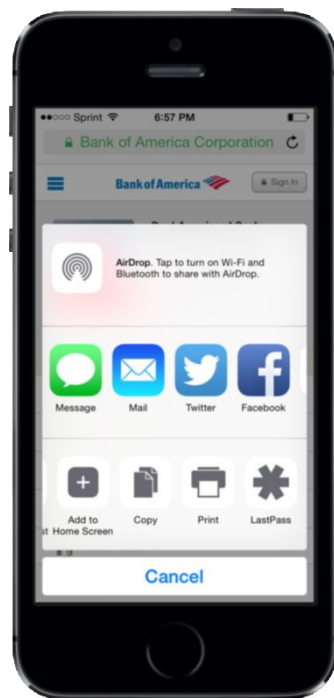
If you already have a LastPass account, you'll see all of your log-ins and passwords that you've stored in your LastPass vault, ready and waiting for you. You can browse to any of those sites and opt to copy your password credentials, or to have the info entered for you automatically. LastPass's browser is not as slick as most mobile browsers; it certainly won't give the iOS version of Safari a run for its money. But it's a very handy way to access the sites you need to log into securely.

Less impressive is the option for using bookmarklets in the mobile version of Safari to replicate the desktop experience. The option is hidden deep within the LastPass settings menu—and, thanks to the convoluted directions, I was unable to install this option properly.

LastPass is available in free and Premium versions for use on the desktop, but you will need to upgrade to Premium in order to access LastPass's mobile apps. LastPass Premium costs \$12 per year.

1Password

1Password (agilebits.com/onepassword) is very similar to LastPass. In fact, it's so similar that choosing between the two often comes down to a few small differences. Both store log-in information in secure vaults and generate secure passwords when needed. Both offer digital



Once the Safari bookmarklet is installed, you can enter passwords with the browser's "Share" button.

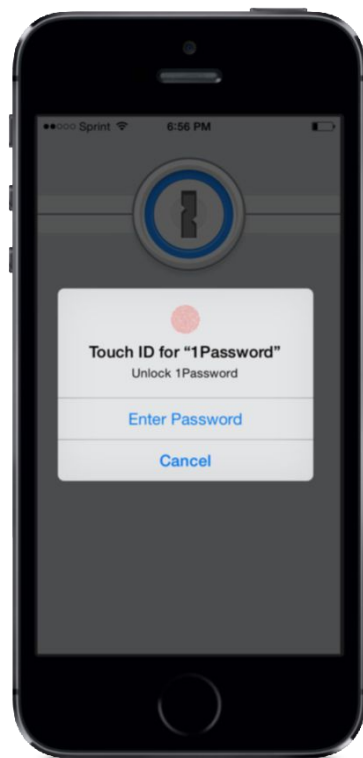
wallets for storing payment information and can help fill in forms. And both mobile apps offer built-in browsers that let you surf the web, and Safari bookmarklets for filling in information while using iOS's own browser.

Deciding between LastPass and 1Password mobile boils down to a few key details. The 1Password mobile app is available for Android and iOS only, while LastPass embraces Blackberry and Windows Phone users as well. But 1Password's mobile apps are a bit sleeker and prettier than LastPass's. Overall, both are easy to use and reliable. 1Password also provided excellent directions on installing the bookmarklet in Safari. In fact, I was able to use them to install the LastPass bookmarklet, too.

The biggest difference may be in the pricing: 1Password's desktop app is more expensive (\$50 for a single user licenses) than LastPass's. The mobile apps are priced competitively: 1Password is free for a feature-limited version, though it allows you to create, edit, and view log-ins, credit cards, and identities, and lets you fill information in both the 1Password browser, 1Browser and in the Safari extension. Paying \$10 for the Pro features lets you create, view and edit items in additional categories (like wireless routers and software licenses) and gives you more options for organizing the information you store—which can be very useful if you have a lot of log-in credentials stored.

Dashlane

Dashlane's mobile app (dashlane.com) is pretty, but it's got more than looks going for it. It's also easy to use and packed with features enough to stand up with competition like 1Password and LastPass. Dashlane can store payment information in a digital wallet, help you generate secure passwords, and store secure notes.



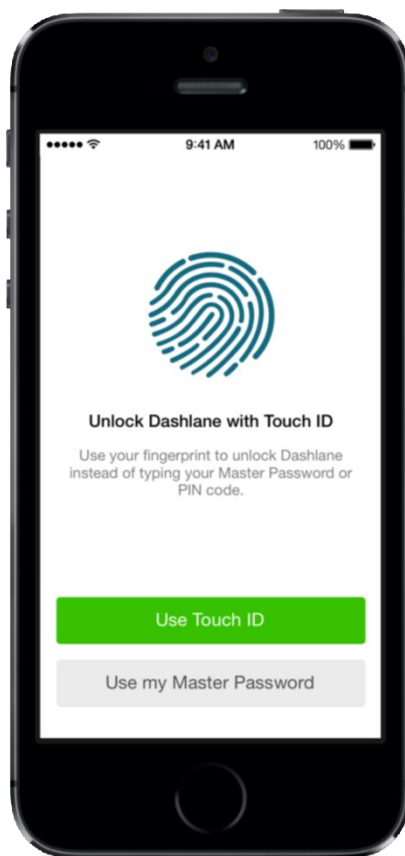
When you enable TouchID integration, it's easy to unlock the 1Password app.

Dashlane is compatible with Apple's TouchID technology, so you can unlock the app with a fingerprint if you enable that option.

Like its rivals, Dashlane includes its own browser, which is—like those of its rivals—a bit clunky. But Dashlane makes you install the Safari bookmarklet if you want it to enter passwords when using iOS, but that part's a snap—Dashlane's mobile app walks you right through the process.

Like LastPass and 1Password, Dashlane is compatible with Apple's TouchID technology, so you can unlock the app with a fingerprint if you enable that option. You can enter passwords and autofill log-in information with a fingerprint, too.

DashLane is free for use on a single device. If you want to sync data across devices—say between a PC and a mobile phone (Android and iOS)—you need to pay \$40 per year for the Premium version, which also adds the ability to backup your account and web access to your passwords. That's a bit pricier than its rivals. 🔌





10 alternative carriers that can save you serious cash

BY IAN PAUL

WHEN IT COMES time to choose a wireless carrier, most Americans just go with AT&T, Sprint, or Verizon. Recently, more and more people have been tempted by T-Mobile's cost-slashing "Uncarrier" moves, but that's about where it ends: the four major carriers. And that reluctance to look beyond the big guys could be costing you money.

Did you know there are a host of different carriers in the U.S. that use the same networks as the big companies but offer some serious discounts on your monthly bill? They're called mobile virtual network

How the Alternative Carriers Compare

COMPANY	CARRIER	BYOD	COST	LTE
Ting	Sprint	Yes (some restrictions)	\$21 monthly average	Yes
Republic Wireless	Sprint	No	\$5-\$40 per month	Yes
FreedomPop	Sprint	Yes	Free to \$80 per year	Yes
Scratch Wireless	Sprint	No	\$2 to \$4 per day, \$25 to \$40 per month	Yes
MetroPCS	T-Mobile	Yes	\$40-\$60 per month	Yes
Brightspot	T-Mobile	Yes	\$30-\$55 per month	Yes
UltraMobile	T-Mobile	Yes	\$19-\$59 per month	Yes
Net10	AT&T, Sprint, T-Mobile, Verizon	Yes	\$25-\$80 per month	Yes
PTel	T-Mobile	Yes	\$20-\$65 per month	Yes
RingPlus	Sprint	Yes	\$2-\$33 per month	Yes

operators (MVNOs) and piggyback on the major carrier's networks.

If you've never heard of MVNOs, you soon will. Google (go.pcworld.com/gmvno) reportedly wants to get in on the MVNO game and offer its own cell plans using the networks of Sprint and T-Mobile, paired with Wi-Fi. Beyond MVNOs, another report says Cablevision (go.pcworld.com/freewheel) is planning a mobile carrier service called Freewheel that will depend entirely on Wi-Fi—including free access to the company's more than one million public hotspots.

But you don't have to wait for Cablevision and Google to get in the cell phone service game. There are already numerous MVNOs running on networks from all four major carriers, and some that also offer

If you've never
heard of MVNOs,
you soon will.

Wi-Fi only plans. Many of the more interesting carriers run on Sprint, but there are also a number of options that use T-Mobile for anyone looking to use a GSM-based phone.

In no particular order, here's a look at 10 MVNOs that are well worth a look, at least on paper. We haven't been able to test these networks ourselves so you'll have to judge their quality on your own.

It should also go without saying, but if you plan to bring your own device (BYOD) to an MVNO—not all allow it—the device must be compatible with that MVNO's underlying network, be it Sprint, T-Mobile, Verizon, or AT&T.



1 Ting (ting.com) is one of the more interesting choices among MVNOs. The company offers what is more or less a pay-as-you-go model. Ting categorizes usage by buckets. The first 1-100 minutes, for example, cost \$3, the next bucket \$9, and the next \$18. There are also buckets for SMS and MB of data usage, and you must pay a monthly per-device fee of \$6 each. The company's complete rates (ting.com/rates) are on its site. Ting says the average monthly cost per device is \$21.

A variety of phones are available with Ting, including the iPhone 5s, Nexus 5, and Galaxy S5. If you're thinking of moving to Ting, the company says it will pay 25 percent of the early termination fee (ETF) from your current carrier, up to \$75.



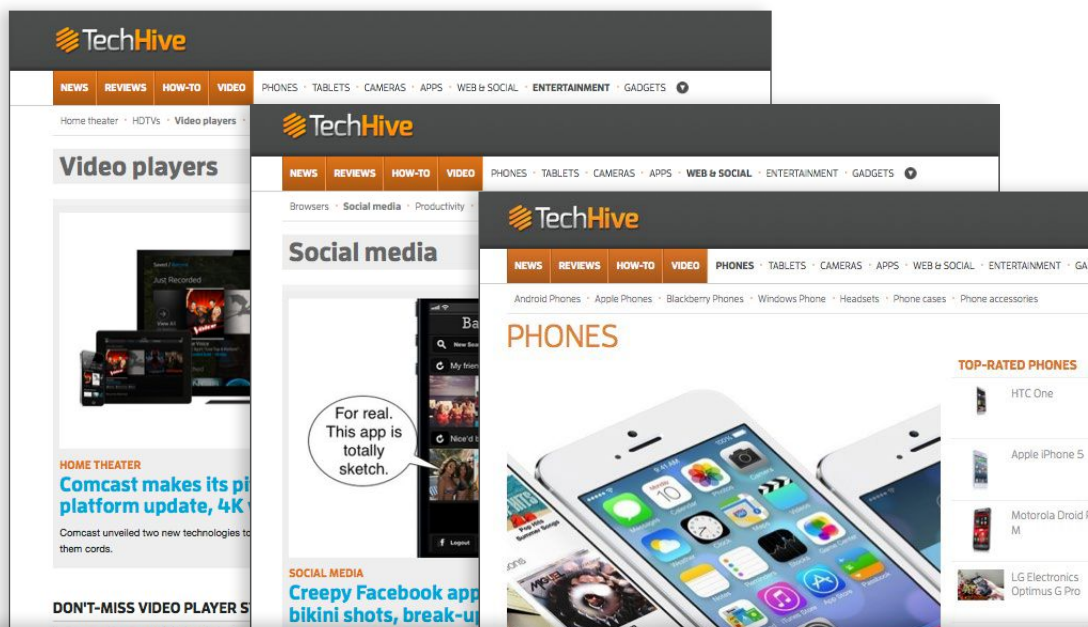
2 Republic Wireless (republicwireless.com) is one of several carriers that integrates Wi-Fi, reverting to a cellular

connection only when Wi-Fi isn't available. In fact, if you live in an urban environment and are daring enough, you can pay just \$5 per month for a Wi-Fi-only plan. The bad news is that if you aren't connected to Wi-Fi your phone won't work. Nevertheless, this might be an ideal plan for a university student who lives on campus.

You can't bring your own device to Republic Wireless, but the company does offer Motorola phones such as the Moto X.



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After the Wi-Fi plan, how much you pay really depends on what you need. For \$40 per month you can get unlimited talk, text, and data on 4G and Wi-Fi, though the data is throttled after 5GB/mo. There's also a \$10 plan that's talk and text on cell and Wi-Fi, plus Wi-Fi only data. Whichever plan you choose, Republic phones default to Wi-Fi whenever possible.



3 Another Wi-Fi centric carrier similar to Republic, FreedomPop (freedompop.com) offers a \$5 Wi-Fi-only plan. You can also get unlimited voice, text, and 500MB of data for \$11 per month, or you can pay \$80 up-front for an entire year of the same plan. There's also a \$20 monthly plan that offers unlimited everything over Sprint's 4G network, but data is downgraded to 3G speeds after the first gigabyte.



4 Scratch Wireless (scratchwireless.com) takes another interesting pay-as-you-go approach like Ting. Instead of buckets, Scratch uses a "passes" concept. You can get a daily pass for \$2 offering unlimited voice, and pay another \$2 for unlimited data for a day. If you need a monthly pass, Scratch offers \$25 for unlimited data and another \$15 gets you a month of unlimited voice. Scratch does not charge for SMS, which is free under all its plans.

Like other MVNOs in this list, Scratch opts for Wi-Fi whenever possible.



5 An actual part of T-Mobile, MetroPCS (metropcs.com) offers standard prepaid packages similar to the mainstream carriers.

You can still save some money, however, as MetroPCS offers unlimited talk and text along with 2GB of LTE and unlimited data at "average MetroPCS network speeds" beyond that for \$40 per month. Plans with 4GB of LTE and unlimited LTE cost \$50 and \$60 per month, respectively.



6 Target's MVNO Brightspot (brightspotmobile.com) offers a number of

basic plans. If you're not a big talker, you can get a \$35 plan that includes unlimited text, up to 3GB of data at 4G speeds, and 300 minutes of voice.



7 Ultra Mobile (ultra.me) offers a number of standard plans that can meet your needs. The company also offers some international options for those who need to call overseas (as do a number of other MVNOs, including Brightspot). For \$29 Ultra Mobile offers unlimited talk and text, and 1GB of LTE data.



8 Owned by TracFone, Net10 (net10wireless.com) offers connections on all four networks depending on your preferences. For \$40 per month you can get unlimited talk, text, and data. The downside is Net10 only offers the first 500MB of data at LTE speeds.



9 A T-Mobile-based MVNO, PTel (ptel.com) is a little bit cheaper than Net10 with \$35 per month for unlimited talk, text, and data. Like Net10, PTel only offers the first 500MB at LTE speeds.



10 If you can get past the cutesy names of its monthly plans (such as Kate, Hazel, and Bella,) RingPlus (ringplus.net) has a wide range of offerings. The most realistic plan for serious smartphone users is Data, priced at \$30 per month. This plan gets you 300 voice minutes, unlimited text, 2GB of data, and unlimited Wi-Fi calling. RingPlus charges 6 cents extra per message for MMS.

Switch and save?

Switching to an MVNO is not for everybody, especially if you live somewhere with limited cellular connectivity options. But if you're in an area where networks like Sprint and T-Mobile offer good service you could save yourself some serious cash. 🔌

You might know **Joshua**.

He loves video games, and he owns enough to know they're not all meant for kids. That's why he reminds his friends (at least the ones that have kids) that they all have **big black letters on the box** to help parents find the ones that are best for their families.

You can learn about those ratings at **ESRB.org**



Los Angeles, CA



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Dell XPS 13: MacBook Air fanboys, look no further

BY GORDON MAH UNG

AS PC FAN boy No. 42, I cannot lie: Apple's MacBook Air 11 has had us whupped. It's slim and light, offers great battery life, and damn—the \$900 price tag of the entry-level configuration just can't be beat by most PC vendors. PCs are all about great performance at low, low prices, right? Oh, the burn!

Well, I'm here to tell you that the MacBook Air just lost all its luster. Dell's sexy new XPS 13 (go.pcworld.com/xps13) just rolled into town with a list of features that eerily sound like every MacBook Air rumor story you've read on CultofAppleRumorMongering.net for the last few months.

Dell's new ultralight is essentially the storied-but-not-yet-released MacBook Air unicorn (go.pcworld.com/air) that every Apple fan wants, but



Watch the
video at
[go.pcworld.
com/xps13vid](http://go.pcworld.com/xps13vid)





just can't have. (At least not yet.)

The XPS 13 has Intel's latest Broadwell U CPU; 8GB of DDR3/1600; an M.2 SSD; great battery life; and a sexy aluminum-and-carbon-fiber shell. Then there's the real star of Dell's show: a 13.3-inch, practically bezel-less display. Most manufacturers would have settled for an 11-inch display in a body this size (see Apple's current MacBook Air lineup for evidence).

The XPS 13 body itself is just 12 inches by 7.8 inches. It's 0.6 inches at its thickest. Put the XPS 13 next to the vaunted MacBook Air 11 and the MacBook Air 13. Give all three laptops a nice, long stare. It looks like someone took the display from the MBA13 and put it into the MBA11. Except Apple didn't do it—Dell did it, and then posted “first” on the Internet.

Beautiful screen in a tiny space

The real burn for Apple users, though, will be the panel in the XPS 13. Dell offers base 1920x1080 and high-res 3200x1800 versions.

For people who think only in Retinametrics, that's a pixel-per-inch count of roughly 276. The 13-inch MacBook Air, with 1440x900 display, is 128 ppi. The 11-inch model actually offers slightly more Retinameters of 135 ppi. But even the 13.3-inch MacBook Pro Retina's high-res screen is but 227 ppi.

Both sizes of XPS 13 display are superior to the MBA in technology

Dell XPS 13 2015

PROS:

- Large screen in small real estate
- QHD+ resolution screen
- Entry-level model is \$800

CONS:

- Compressed keyboard
- Weird placement for camera

BOTTOM LINE:

Dell's XPS 13 shoehorns a 13.3 inch monitor into the body of an 11 inch laptop.

\$1400





The Dell XPS 13

is small enough to fit in an interoffice envelope.

as well as resolution. The MacBook Air models use mere TN screens (albeit better examples of the genre), while the XPS 13 uses IPS. For anyone who does color-critical work such as photo editing or design, TN can't beat IPS. The XPS 13 I reviewed also includes 10-point touch.

Ultrabooks aren't known to offer very bright panels and usually hover in the 300-nit range. The 2014 ThinkPad X1 Carbon I used for comparison, for example, is rated at 300 nits, and I measured it at about 259 nits smack-dab in the middle. The XPS is rated at an eye-searing 400 nits, and I measured 399 nits.

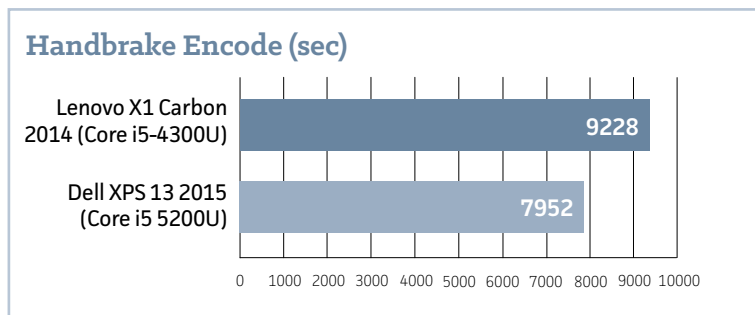
The screen is very impressive, especially when you consider the space Dell is working with. I didn't notice any serious banding issues nor backlight bleeding, and lighting was fairly consistent. One thing I did see was a three-inch by one-inch, mustache-shaped discoloration when looking at a uniform white screen with the brightness up. That may be a defect in this particular review unit. The company said other units don't exhibit the same phenomenon.

There is a tradeoff to the near-zero bezel, though: There's no room for the 720p webcam. Instead, Dell puts it in the lower left corner of the XPS 13. Your video conference colleagues will see part of

your hand while you're typing, as well as a great view of your wattle. It's not pleasant.

The XPS 13 is also the first official laptop we've seen with Intel's new Broadwell U, outside of CES. The short and skinny of Broadwell U is that it's Intel's 5th-generation Core i CPU and uses the company's 14nm die process. The end result is the promise of better battery life and somewhat better CPU and graphics performance.

I'll delve little deeper into Broadwell U's performance in an upcoming story. Meanwhile, I compared the XPS 13 to an older, Haswell-based Lenovo ThinkPad X1 Carbon.



Despite having a lower Turbo Boost clock, the XPS 13 pulls ahead of the Lenovo X1 Carbon by a good margin.

SHORTER BARS INDICATE HIGHER PERFORMANCE

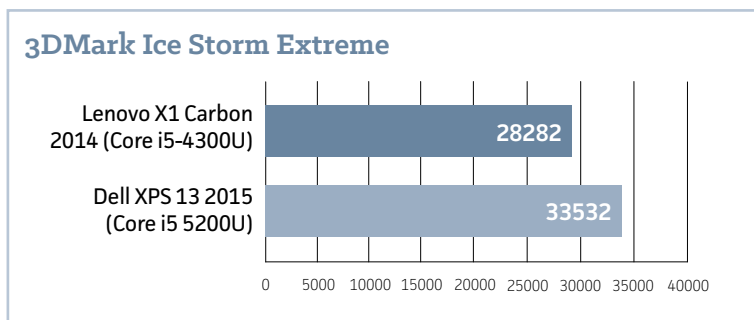
In our Handbrake test, we take a 30GB 1080p resolution MKV file and transcode it to a far more manageable size for viewing on an Android tablet.

The XPS 13 easily outruns the older X1 Carbon in this pure CPU test. One thing to keep in mind when comparing the two, however, is the Core i5 5200U in the XPS 13 actually has a lower-rated turbo frequency of 2.7GHz, compared to 2.9GHz for the Core i5 4300U in the X1 Carbon. During my tests though, the XPS 13 actually ran at 2.5GHz, while the X1 Carbon ran in the 2.17GHz range.

Due to an apparent bug in MobileMark 2014 that BAPCo is looking into, I'm not using the performance score from the suite. Instead, I ran PC Mark 8's Home test on both laptops. The XPS 13 and its Broadwell U once again came out on top.

The last benchmark chart I'll put you through is 3DMark's Ice Storm Extreme, which measures graphics performance. Again, the Broadwell U in the XPS 13 offers a nice improvement over the older X1 Carbon, but gamers shouldn't get their hopes up. You won't be playing Far Cry 4 at the panel's native resolution anytime soon.

Perhaps the most important feature in a laptop today is battery life. To determine that I used BAPCo's new MobileMark 2014 benchmark. The test uses popular real-world applications such as Chrome, Office 2013, Photoshop CS6, and Premiere Pro CS6 to perform various tasks at 150 nits, which is a reasonable brightness.



The better graphics core in the Broadwell U helps keep it ahead of the Haswell U in the Lenovo.

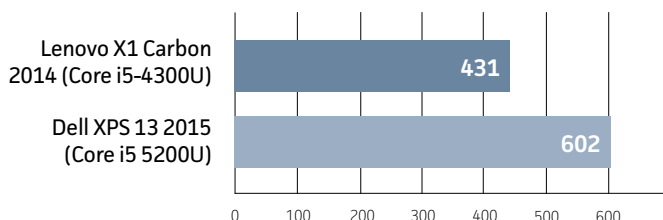
LONGER BARS INDICATE HIGHER PERFORMANCE

MobileMark 2014 is unlike most mobile benchmarks in that it measures only the response time and actually allows a laptop to stop and pause. You don't, for example, type for seven hours straight in Word. You type, pause, use your phone for a few minutes and then go back to typing. Then you task-switch to email. MobileMark actually lets the laptop's screen dim or blank out before resuming a task. MobileMark 2012 remains the industry standard among OEMs for testing, so we're actually a little ahead of the curve now.

It's also worth mentioning that the battery in the XPS 13 is rated at 52WHr, which is actually a reduction from the previous XPS 13, yet it offers better battery life.

Our MobileMark 14 run in Office-drone tasks puts the battery life at 10 hours for our configuration. The XPS 13 with the 1920x1080 screen

MobileMark 2014 Battery Life (min)



LONGER BARS INDICATE HIGHER PERFORMANCE

MobileMark 14 is perhaps the most realistic test for measuring actual office productivity battery life. The Broadwell chip delivers in battery life. The XPS13 has a larger battery too.

without touch actually ups the battery life another four hours, to nearly 15 hours of use. If you're looking to go off-grid even longer, add Dell's PowerCompanion battery brick so you can charge the laptop much as you would your phone.

As with the badly placed camera, Dell made one other dubious choice with the XPS 13: the keyboard design. Dell crams the important keys (function keys don't count to me) in a space about 10.5 inches wide and 3.53 inches deep. Travel is rated at 1.3mm.

The Lenovo X1 Carbon's four rows fit into a spacious 11.3-by-3.6-inch box. Even the MacBook Air 11, which is physically a bit smaller than the XPS 13, gives the keyboard 10.75 by 3.5 inches.

To see whether the smaller keyboard would impact my typing, I took an online test on the X1 Carbon and the XPS 13. I typed at 72 wpm on the X1 Carbon and 70 wpm on the XPS 13, producing six errors both times. On a full-sized Corsair K60 mechanical keyboard, I hit 88 wpm. The keyboard on the XPS 13 is tolerable, but definitely a compromise.

The trackpad appears to be made by Synaptics and I had no complaints. Despite the cramped quarters, my palms didn't cause cursor jump, but there was also no way to adjust palm rejection on the XPS 13.

One final spec to mention in the XPS 13 vs. MacBook Air battle is the SSD. The XPS 13 uses an M.2 SSD, but it conforms to the SATA portion of M.2 and thus isn't a true PCIe drive. I saw sequential reads and writes in the 450MB/s range. That's decent, but PCIe-based storage devices like in the MacBook Air can reach close to 800MB/s.

Dell said it has plans to release a PCIe-based SSD for the XPS 13 soon. Before the Apple crew starts to crow though, I should mention the M.2-shaped devices in the Haswell-based MacBook Airls aren't actually M.2—they're a custom,

proprietary design, so you can't just upgrade using off-the-shelf parts.

In the end, I honestly have few complaints beyond the compressed keyboard and odd camera placement. The XPS 13 gives you good performance and great battery life in an incredibly compact and solid-feeling package. Even the pricing is almost reasonable. This model with its 256GB SSD, 8GB of RAM and QHD+ touchscreen costs \$1,400. If that's too rich, Dell really takes a shot at Apple with its base model. That XPS 13 comes with a 1920x1080 non-touch IPS panel, 128GB SSD and 4GB of RAM. At \$800, it packs components a magnitude better than the MacBook Air 11's, and it's \$100 cheaper.

Few Mac users may cross over to the light side, but at least there's finally a PC with better specs and a better price in the world. Which is the way it's supposed to be. 🔌

The XPS 13 gives you good performance and great battery life in an incredibly compact package.



The XPS 13 is easily an early contender for the best Ultrabook of the year



Nvidia GeForce GTX 960: Maxwell meets PC gaming's sweet spot

BY BRAD CHACOS

THE BATTLE FOR PC gaming's "sweet spot" has a new challenger. With the GeForce GTX 980 and 970 firmly in command of the premium graphics card market, Nvidia's setting its sights on the crucial 1080p enthusiast segment with the GTX 960, the first truly mainstream iteration of its powerful, yet stunningly power-efficient "Maxwell" processor architecture.

The GTX 960 (geforce.com) delivers outstanding 1080p gaming capabilities, rocking a silky-smooth 60 frames per seconds in even demanding titles with most of the bells and whistles turned on. And priced at just \$200, the GTX 960 is poised to make some waves.

Meet mainstream Maxwell

Let's take a quick, high-level look at the GTX 960's key points before diving into real-world benchmarks.

The GTX 960 uses a new "GM206" GPU built using the 28nm process, rather than the GM204 found in the GTX 970 and 980, but for many of the specs that matter it's essentially a GTX 980 cut in half. The GTX 960 packs 1024 CUDA cores, 16 streaming multiprocessors, 32 ROP units, and 64 texture units, while drawing power from a single 6-pin power connector—all exactly half of what GTX 980 claims. Nvidia's insanely efficient Maxwell architecture is put to good use once again:

The GTX 960 has a scant 120 watt TDP, and it runs cool and quiet even under heavy loads, opening the door for nifty sound-saving tricks and beastly overlocks... which we'll get into later.

In reference form, the GTX 960 measures 9.5 inches long, taking up dual slots in your case and packing a dual-link DVI port, an HDMI 2.0 port, and a trio of DisplayPort connections.

One other thing jumps out staring at the spec sheet: The GTX 960 features only 2GB of GDDR5 memory with a 128-bit bus, which seems... paltry, to say the least. But Nvidia says that caching improvements in Maxwell, combined with the company's third-generation delta color compression engine, help the GM206 GPU use its memory bandwidth far more effectively than its predecessor, the GM106 "Kepler" CUDA core. As such, the "lack" of memory bandwidth wasn't an issue in our testing, and the limited RAM isn't likely to be an issue when you're gaming at 1080p, a.k.a. the target use for this card.

And really, what do you expect for \$200, anyway? Nevertheless, it would've been nice to see 3GB or 4GB of memory, or at least a wider memory bus to more effectively future-proof the card.

Beyond the hardware, the GTX 960 boasts the same software tricks as its bigger 900-series brothers: the Voxel Global Illumination lighting technique, VR Direct, Dynamic Super Resolution, Multi-Frame Anti-aliasing, it's all there. Dynamic Super Resolution—which renders games

The GTX 960 has a scant 120 watt TDP, and it runs cool and quiet even under heavy loads, opening the door for nifty sound-saving tricks.

at higher resolution than your monitor, then downsamples them to fit your monitor to improve visual fidelity—isn't quite as useful on the GTX 960 as it was on the GTX 980, because the performance penalty hurts far more on a midrange card. But it can provide a visual boost without dragging frame rates into the pits for more modest titles, like *World of Warcraft* or *League of Legends*.

Nvidia's Multi-Frame Anti-aliasing technology is getting a big shot in the arm with the release of the GTX 960, however. Anti-aliasing smooths out visual jaggies in games, albeit with a performance cost. MFAA delivers visuals on par with multi-sample anti-aliasing, but with far less of an impact on frame rates. Testing has shown that compared to 4x MSAA, 4x MFAA delivers roughly the same level of visual fidelity at around 8- to 15-percent higher frame rates, depending on the title. That's none too shabby!

While our benchmarks don't leverage MFAA, as the technology isn't compatible with AMD cards, Nvidia's enabling the technology by default if you use the GeForce Experience app to automatically optimize your games. MFAA's rolling out in force to coincide with that: While the technology worked with only 20 or so games initially, it's now supported by every DirectX 10 and DirectX 11 game that supports MSAA, with the exception of *Dead Rising 3*, *Dragon Age 2*, and *Max Payne 3*.

The GTX 960 and its GM206 chip also feature support for H.265 encoding and decoding. The GTX 970 and 980 support only H.265 encoding. The GTX



The Asus Strix looks an awful lot like Bubo, that mechanical owl in *Clash of the Titans*.

960 also supports HDCP 2.2 “content protection” over HDMI. In other words, the GTX 960 should be able to stream 4K Netflix streams like a champ—if 4K displays ever really become a big thing, that is.

Nvidia's new graphics card also includes support for DirectX 12, the next-generation, performance-enhancing gaming API coming with Windows 10.

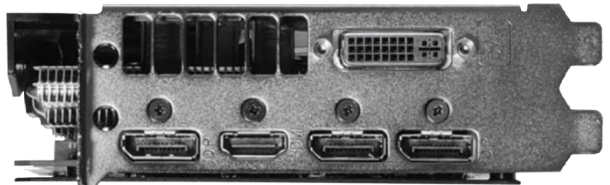
Meet the Asus GTX 960 Strix and EVGA GTX 960 SSC

Now let's get into the fun stuff. We reviewed two GTX 960 samples: The Asus Strix with DirectCU II cooling and EVGA's GTX 960 SuperSC (SSC) edition with ACX 2.0+ cooling.

Remember I mentioned how coolly and efficiently the Maxwell architecture lets these new Nvidia cards run? Third-party graphics card makers are already putting that efficiency to tremendous use. Asus and EVGA's cards don't even activate their fans until temperatures hit 55 C and 60 C, respectively. And when you combine Maxwell's efficiency with the custom aftermarket cooling solutions found in these cards, you won't hit those temps often in more casual or modest games, like *League of Legends*, *The Walking Dead*, and many indie or 4x strategy games.

The Asus Strix topped out at 58 C in our tests, and that was only after applying a hefty overclock and running the Furmark benchmark, which Nvidia's press materials call a “power virus.” The EVGA SSC hit max temperatures of around 75 C under extreme duress, but ran far cooler in normal scenarios. Both cards ran extremely quietly even when the fans were whirring, almost to the point of eeriness.

Both cards also feature impressively hefty overclocks out of the box. While Nvidia's GTX 960 reference clocks stand at 1126MHz stock and 1178MHz boost, the Asus Strix speeds along at 1253MHz/1317MHz out of the box;



The port selection on the Asus Strix is bog-standard for a GTX 960.

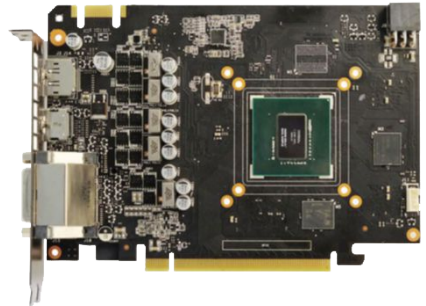
the EVGA SSC powers along at 1279MHz/ 1342MHz. I'd have liked to underclock one of them to stock speeds for reference, but I couldn't: The overclocking software that ships with these cards only let you reduce speeds by up to 90MHz. Asus and EVGA's cards were overclocked by 127MHz and 153Mhz out of the box, respectively.

(Foreshadowing: We pushed it even further.)

The \$210 EVGA GTX 960 SSC with ACX 2.0+ cooling measures slightly longer than a reference GTX 960, at 10.25 inches. The card packs a thick heat sink underneath its dual fans, along with a cooling plate to keep your card's memory and MOSFET chilled, as well as straight—not curved—heat pipes, which EVGA says reduces GPU temperatures by an extra 5 C. The EVGA SSC requires an 8-pin power connector, rather than the reference card's 6-pin. In the box you'll find an 8-pin power cable, a DVI to VGA adapter, EVGA stickers, a poster, and a utility installation disc that includes EVGA's PrecisionX overclocking utility.

The EVGA GTX 960 SSC packs dual BIOSes, which you can toggle with the flick of a physical switch on the card. By default, the card uses the "dBi BIOS," which keeps the fans off until temps hit 60 C. Alternatively, you can use the "SSC Performance BIOS" for more oomph. Our test results below use the default dBi BIOS setting. Switching to the SSC Performance BIOS typically improved frame rates by 1 to 3 fps in our games suite, with one notable exception: The EVGA SSC hit 60.18 fps in Bioshock Infinite in dBi, but that leaped to a whopping 76.01 fps with the Performance BIOS.

The nifty-looking \$215 Asus Strix resembles an owl, with thick, snaking heat pipes almost taking the place of eyebrows. It measures a bit shorter than a stock GTX 960 at 8.5 inches and it includes thoughtful touches like labeled output connections and a full metallic backplate. You'll find a DVI to VGA converter inside its box, too, along with a disc containing Asus' own GPU Tweak overclocking tool.



The Asus GTX 960 Strix, sans shroud, revealing the PCB in all its glory.

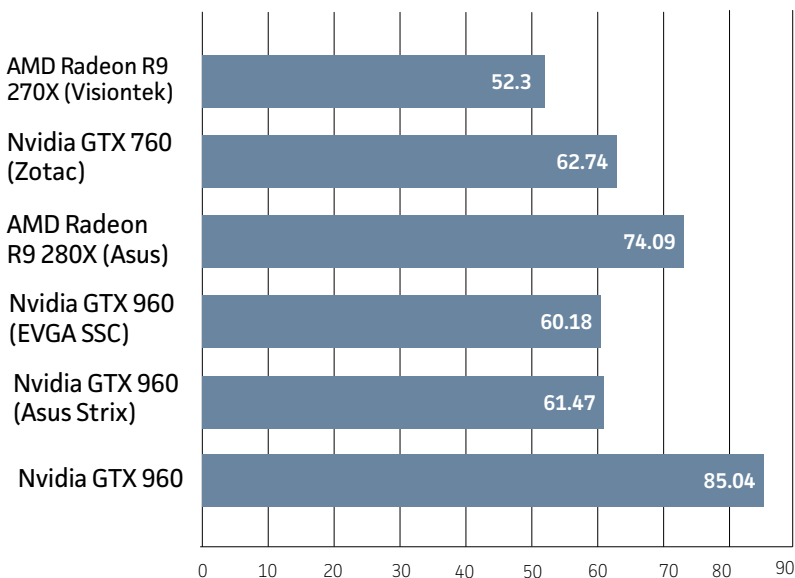
Benchmarking the GTX 960

We tested the cards inside PCWorld's new benchmarking rig, which features a liquid-cooled Intel Core i7 5960X, 16GB of Corsair's high-end Vengeance LPX DDR4 memory, a 480GB Intel 730 series SSD, and more. You can read all the test rig details in PCWorld's build guide (go.pcworld.com/diygamingpc).

We're comparing the GTX 960 cards against a slew of similarly priced offerings: The EVGA GTX 970 FTW with ACX 2.0, a Zotac GTX 760 AMP! Edition, a Visiontek Radeon R9 270X, and an Asus R9 280X DirectCU II TOP. Nvidia's reviewer's guide compares the GTX 960 against the Radeon R9

Bioshock Infinite 1920x1080 resolution

(Ultra image quality+ diffusion depth of field enabled)



FRAMES PER SECOND. LONGER BARS INDICATE BETTER PERFORMANCE.

(For a comprehensive look at all GTX 960 benchmark tests go here: go.pcworld.com/benchmark.)

285, but alas, I don't have one on hand.

Got it? Good. Let's dig into frame rates. First up: *Bioshock Infinite*. Virtually all modern graphics cards handle Columbia's floating islands with aplomb, but it's a sterling representative of the Unreal 3 engine. One thing that raw frame rates don't show is how deeply GeForce cards can occasionally stutter running this game. Every Nvidia card we've tested recently dips into single-digit minimum frame rates during *Bioshock Infinite*'s benchmark. It's rare for the frame rate to plunge so low, but it causes notable stuttering when it does happen.

Overclocking the GTX 960

Nvidia's press materials stress the GTX 960 is an overclocker's dream, and you know what? That's entirely accurate. I wasn't sure I'd be able to squeeze much extra out of the cards given the beefy overlocks Asus and EVGA apply out of the box, but boy, was I wrong.

Using the overclocking software included with each graphics card, but without touching temperature profiles or voltage, I was able to achieve significant additional overlocks on each card.

The GTX 960 is
an overclocker's
dream.

EVGA SSC clock speeds

- **Base:** 1279MHz core, 1342MHz boost, 1753MHz memory
- **Overclocked:** 1366MHz core, 1429MHz boost, 1940MHz memory

Asus Strix clock speeds

- **Base:** 1253MHz core, 1317MHz boost, 1800MHz memory
- **Overclocked:** 1400MHz core (!!!), 1464MHz boost, 1933MHz memory

Nvidia's press materials say it's been able to hit 1450MHz overlocks with the reference cooling design, all without tweaking card voltage or fan speeds. We didn't quite hit those lofty speeds, but a 1400MHz clock speed is still insane. Remember: The GTX 960's default reference speed is 1126MHz.

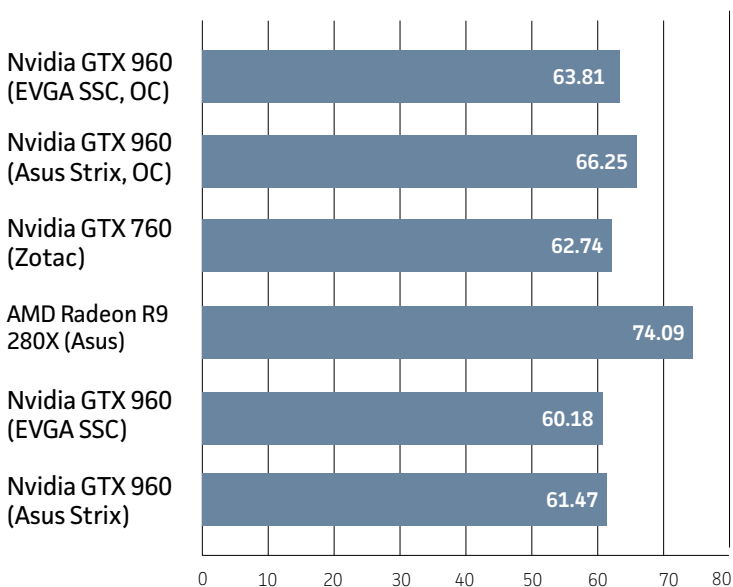
The Asus Strix and EVGA SSC could be pushed even further if you wanted to roll up your sleeves and start tweaking voltages and fan

speeds—possibly a whole lot further. Both cards were still humming away happily at their stock load temperatures when they began demonstrating overclock instability. In other words, each should take a lot more heat if you wanted to apply more juice and crank the clock speeds even higher.

So what do those extra speeds get you in term of frame rate? I'm glad you asked. The frame rate leaps aren't mind-blowing, but again, remember that these cards had hefty overclocks out of the box. The gains would be much more dramatic on a GTX 760 that started at reference clock speeds—assuming it overclocked as well as these models.

Bioshock Infinite 1920x1080 resolution

(Ultra image quality+ diffusion depth of field enabled)



FRAMES PER SECOND. LONGER BARS INDICATE BETTER PERFORMANCE.

(For a comprehensive look at all GTX 960 benchmark tests [go here](http://go.pcworld.com/benchmarks):
go.pcworld.com/benchmarks)


Nvidia GeForce GTX 960: Finding the sweet spot

The GTX 960 is everything you could ask for in a graphics card for the mainstream enthusiast. The models we tested delivered a firm 60 fps in every title tested with “high” graphics presets—and that should be boosted even higher when using MFAA. The GTX 960 runs cool. The GTX 960 runs amazingly quiet. And best of all, the GTX 960 is cheap.

Nvidia’s positioning the GTX 960 as a killer upgrade for people currently rocking an older GTX 560 or 660, and compared to those the GTX 960 is clearly a vast step up in performance and power efficiency. (It’s a less compelling upgrade if you already own a GTX 760, or even a GTX 670.) But really, the GTX 960 puts immense pressure on the next generation of AMD’s Radeon graphics cards before the next generation of Radeon graphics cards has even been announced.

The technical superiority of the GTX 980 and especially the \$330 GTX 970 have already forced AMD to dramatically slash prices on its highest-end graphics cards. The cost-cutting will very likely carry over to the mainstream pricing segment now that the GTX 960 is here. By pricing the GTX 960 at \$200, rather than the \$250 that enthusiast 1080p cards like the GTX 760 and Radeon R9 285 have typically cost at in the past, Nvidia’s signaling that it’s taking the battle for your wallet very seriously indeed.

AMD’s GTX 960 counterpart, the Radeon R9 285, will have to drop to at least \$200 to remain relevant—and likely lower, given the Nvidia card’s overwhelming power efficiency dominance. (You can already find many, but not all, models at that price after rebates.) AMD’s Never Settle game bundles don’t appear in effect any more, either—at least on Amazon and Newegg—eliminating that differentiating Radeon benefit.

Would I have liked to see a bigger jump in performance from the GTX 760 to the GTX 960? Sure. And a larger memory frame buffer wouldn’t hurt in an era of rapidly expanding games. But Nvidia’s GTX 960 does what it’s designed to do—play current games at playable rates and 1080p resolution with most graphical features enabled—very, very well indeed. You’d be very happy with either the Asus Strix or the EVGA SSC. 



Samsung T1 External SSD: Super small, super light, super fast

BY JON L. JACOBI

QUOTE: “**IT OVERCOMES** the limits of existing options by dramatically boosting mobility, performance, responsiveness and capacity.” Wow. Veteran storage dude and professional cynic that I am, I supposed Samsung’s claims for their new T1 external USB 3.0 SSD (go.pcworld.com/t1ssd) were hyperbole. Well, dye my hair red and call me Harpo—they’re not. I want one.

Your reaction when unveiling the T1 might well be “Is that all?” Apply the best possible connotation. The T1 is less than three inches long, a little over two inches wide, and a mere third of an inch thick—71 x 53.2 x 9.2 millimeters, to be metrically precise. Horizontally, that’s smaller than a credit card. Even better—the T1 weighs practically nothing. Indeed, the 512GB model’s 26 grams of heft is so inconsequential, it’s easy to forget you have it in your pocket. It’s only slightly heavier than the five-inch USB 3.0 cable that ships with it! If you’ve been contemplating a large-capacity USB stick, you might want to check out the T1.

If tiny and feather-light don’t sell you, how about fast? CrystalDiskMark rated the drive at around 300MBps to 450MBps reading depending on the system I tested it on, with commensurately fast IOP ratings. In my real-world transfer tests using my own Core i7 system with an OCZ Revo drive, the T1’s writing averaged 113MBps with 10GB’s worth of average-sized files and folders, and 135MBps with a single large 10GB file. The big news is that first figure. I’ve seen external SSDs that manage the same write pace with the large file, but many go in the dumper with the 10GB file and folder mix.

As for reading, perhaps CrystalDiskMark wasn’t overly optimistic after all. How does 192MBps with the file and folder mix and 263MBps with the single 10GB file sound to you? For an external USB 3.0 drive, that’s excellent real-world performance. The T1 uses the same MGX controller introduced with the 850 EVO and a SATA-to-USB bridge.

Aside from blazing speed, you’ll likely get better-than-average longevity. The T1 uses the same 3D or stacked NAND as the company’s 850-series SSDs (go.pcworld.com/850evo).

You can read up on the niceties of 3D NAND in those reviews, but to



The Samsung T1 features the standard USB 3.0 micro connector.

make a long story short—it should provide far longer life than current single-layer MLC. The T1 carries a three-year warranty, which is good for an external drive that’s likely to be subjected to a lot of physical abuse. But it doesn’t back up my notions about longevity. Samsung hasn’t given the drive a TBW (TeraBytes Written, i.e. the amount of data that can be written before drive failure.) rating yet, but best guess is that it should be similar to the 850EVO—75TBW for the 250GB and 150TBW for the larger models.

Aside from blazing speed, you’ll likely get better than average longevity.

Now for the somewhat bad news.

The T1, though average-priced in SSD terms, is still 60 cents a gigabyte. The 250GB version is \$179.99, the 500GB is \$299.99, and the 1TB model is \$599.99. That’s far more than a portable hard drive. If you’re looking for capacity on the cheap, the venerable spinning platters are still your best bet.

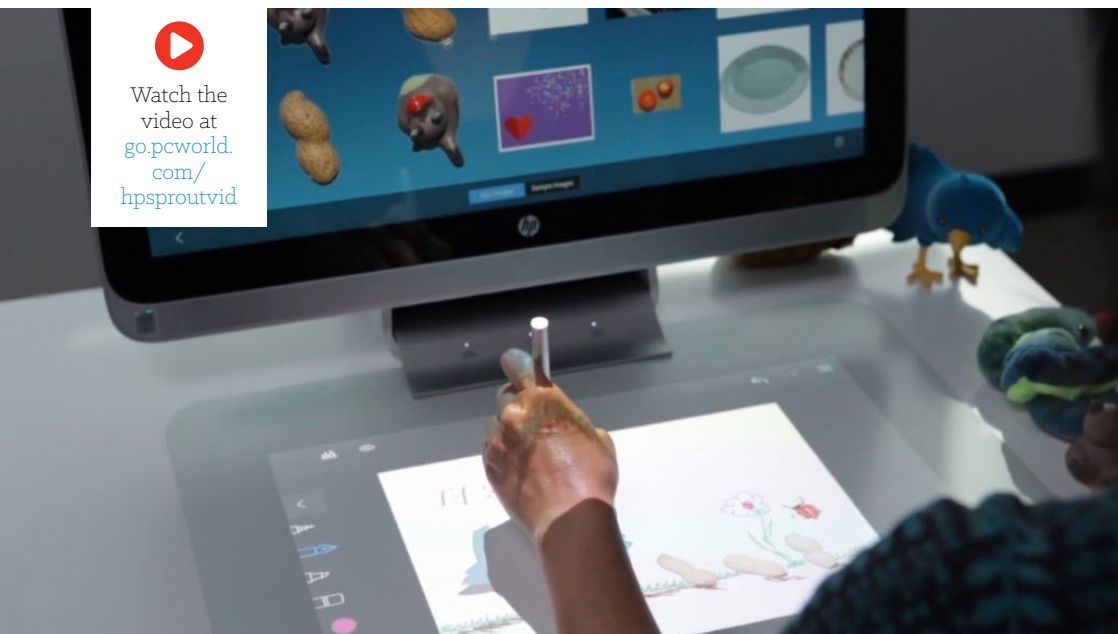
One other complaint. Samsung likes to play games with software such as the RAPID disk caching that can be used with their internal SSDs. When you first run the T1, you must run a utility that sets up the drive and enables/disables the onboard encryption. No problem. However, I wound up with something called the Samsung Portable SSD Daemon running in the background on my computer. It was located in a subfolder in the Program Data folder area—not where executables are supposed to run from.

Worse, there was no uninstall option. I’m a great believer in less is more when it comes to background applications and this did not make me happy. Stopping the process and deleting it manually solved the issue, but not every user will know how, or feel comfortable doing this.

Rogue software or not, I’d trade any external flash drive I have for a T1. Scratch that. I’d trade all of them and most of my hard drives for a T1. Tiny, light, very fast for USB 3.0—having to carry a cable around with you is a small price to pay for such performance. Small indeed. 🔌



Watch the
video at
go.pcworld.com/hpsproutvid



Hands-on: HP Sprout, an imaging powerhouse built into a touch-friendly PC

BY MELISSA RIOFRIO

THE SPROUT (sprout.hp.com), HP's innovative new PC, towered above my desk. An array of cameras and a projector (collectively called the Illuminator) loomed over its 23-inch touch display.

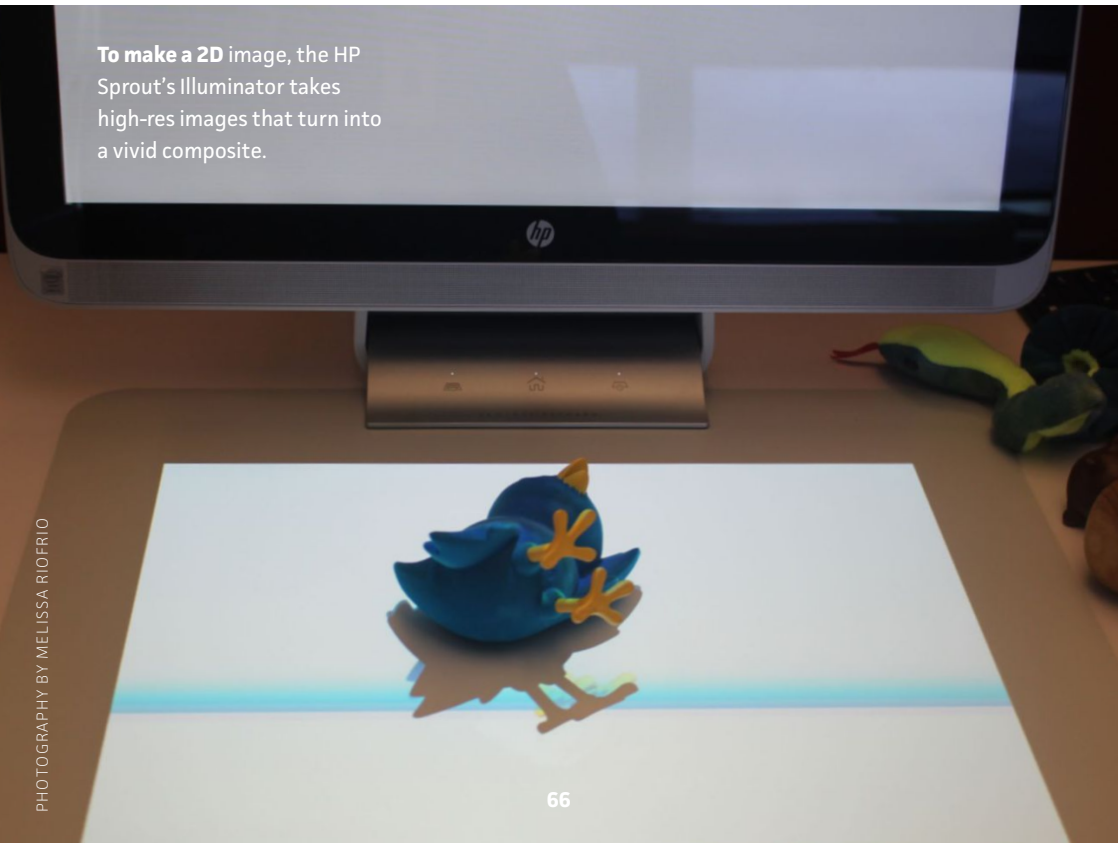
I put a toy on the Touch Mat, a work surface extending from the front of the Sprout like a huge mousepad. Lights flashed from the Illuminator.

Shortly thereafter, a vivid image of the toy appeared on the Touch Mat.

Using my fingers, I slid it onto an existing image. I had just made a new picture, without ever touching a keyboard or a mouse.

With the Sprout, HP is inaugurating a new approach to computing called “blended reality.” In plainer terms, it’s a PC designed to work with imaging and touch technologies, paired with software that makes tasks more tactile and interactive. You can see how artists—and definitely kids—would enjoy working with their hands like this, even if the end results are still digital. Underneath it all lies a full-fledged computer that can run all the traditional programs with a keyboard and mouse.

Here’s the most intriguing part: The Sprout can also create 3D images of scanned objects. You can rotate and move the object, just as you

A photograph of an HP Sprout monitor on a desk. The monitor's screen displays a 3D digital model of a blue bird with orange beak and feet, which is a scanned object. The bird is positioned on a white surface in front of the monitor, and its shadow is cast onto the surface. The monitor's bezel is silver with the HP logo in the center. The desk is light-colored wood. To the right of the monitor, there are some colorful, abstract objects. The text on the screen reads: "To make a 2D image, the HP Sprout's Illuminator takes high-res images that turn into a vivid composite."

To make a 2D image, the HP Sprout's Illuminator takes high-res images that turn into a vivid composite.

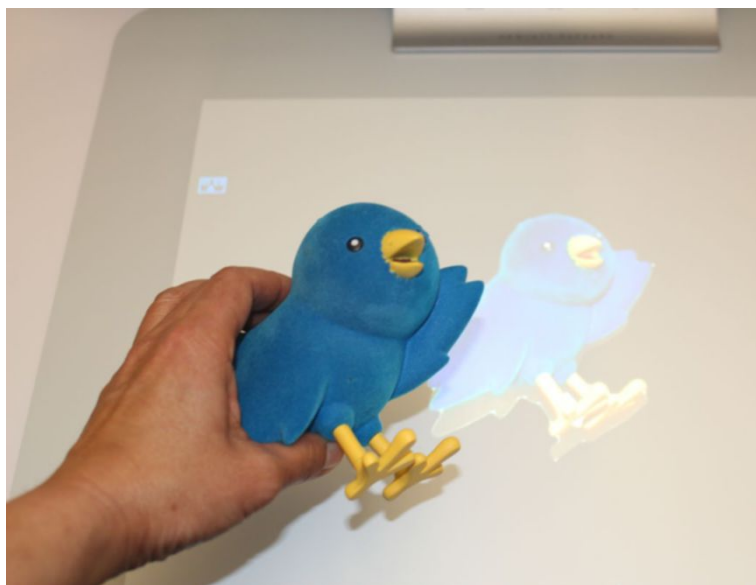
might in a professional program like AutoCAD. As HP continues to develop applications for the Sprout, you can see this capability figuring into, say augmented-reality applications, or even games.

I spent a few days with the Sprout before giving it over to our lab for a full review. It's a brand-new product and it definitely has some growing to do, but if HP is in this for the long haul—as I was assured when I previewed this PC (go.pcworld.com/sprout) last autumn—then it's got a big head start on its competitors, especially when it comes to 3D imaging.

The Touch Mat: A digital sketch pad

The Sprout's Touch Mat attaches to the main unit and acts like a second display. Its image is beamed from the overhead projector.

Think of it as a digital sketch pad. You control the Sprout's main imaging functions using the icons that appear along the top. Tools for specific activities appear along the left and right sides.



Scanned images appear on the Sprout's Touch Mat, where they can immediately be moved around or manipulated.

You can take the included Adonit Jot stylus and draw a picture using the pen tools. You can choose different pen tips—a fine line, a calligraphy pen, or a marker pen—and choose the ink color and line thickness.

It's somewhat like drawing on paper, except there's not much pressure sensitivity. Also, the overhead projector casts shadows underneath your hand, which could obscure the area where you're drawing.

Taking 2D and 3D images with the Illuminator

Drawing programs already exist, as do photo-editing applications. The Sprout's touch interface and especially the Touch Mat make these tools feel more intuitive, but I realize some people still won't be impressed. The Sprout's image-capture technology is completely unique, however, as is the way its Workspace software pulls it all together.

I downloaded a photo of gargoyles from Notre Dame cathedral in Paris. Once an image is in the Workspace on the main display, you can “flick” it onto the Touch Mat just as easily as it sounds: The image slides from the main display to the Touch Mat. You can move as many images there as you like and start using them to assemble your own creation.

Tool icons that appear on the right side of the Touch Mat let you move images to the “front” or the “back” (similar to the layering system in Photoshop), and tool icons on the left let you use ink and text tools to draw or write on the image.

In my case, I took the gargoyles image, then flicked down my image of the toy (the Twitter bird). I positioned it on the railing next to one of the gargoyles, and voilà: The Twitter bird was photobombing the Notre Dame gargoyles.

This may seem gimmicky, but think about what the gimmick means. The combination of the imaging hardware and the image creation and manipulation features gives you a lot of freedom to make things as banal as birthday cards or as fun as digital murals, all with the more natural feel of using your hands or a stylus.

The Sprout's touch interface make these tools feel more intuitive.



Looking ahead to 3D printing, augmented reality

The Sprout's 3D image capture technology is still in beta as of this writing, and we'll delve into it further when we do a full review.

For now, the Illuminator can create a partial 3D image—basically, the top of an object. It comes out looking like a shell that you can rotate to see the underside.

The early apps that come with the Sprout show further potential. There's the *Story Producer* game, based on the animated film *How to Train Your Dragon 2*: You choose different backdrops and characters, then their "motivations," such as a cheer or anger. The characters act out a short scene accordingly.

You could get bored with this in two minutes, or you could see a future where you can put in your own backdrop, and 2D- or 3D-scan

The HP Sprout's
3D Capture technology uses Intel RealSense cameras to take multiple images of the object to build the final image.



Using the
 DreamWorks' Story Producer, ap you can create short features with canned backdrops, characters and motivations from the movie *How to Train Your Dragon 2*.

in your own characters, and set them in motion. Maybe you'd use the PowerDirector video editor that comes with Sprout, which currently lets you do rudimentary beginning/end cuts, and add various effects and transitions. It's nothing out of the ordinary, but packaged with the Sprout, you might someday be able to customize your videos, pulling in images or footage from other sources.

Let's be honest: Some of my coworkers who've tried the Sprout don't see the point. I can see where they're coming from, but I think it's because they don't see where the Sprout and its ideas are going. Traditional computing applications will be with us for a while, sure, but advances in imaging technology point to new kinds of computing on the horizon.

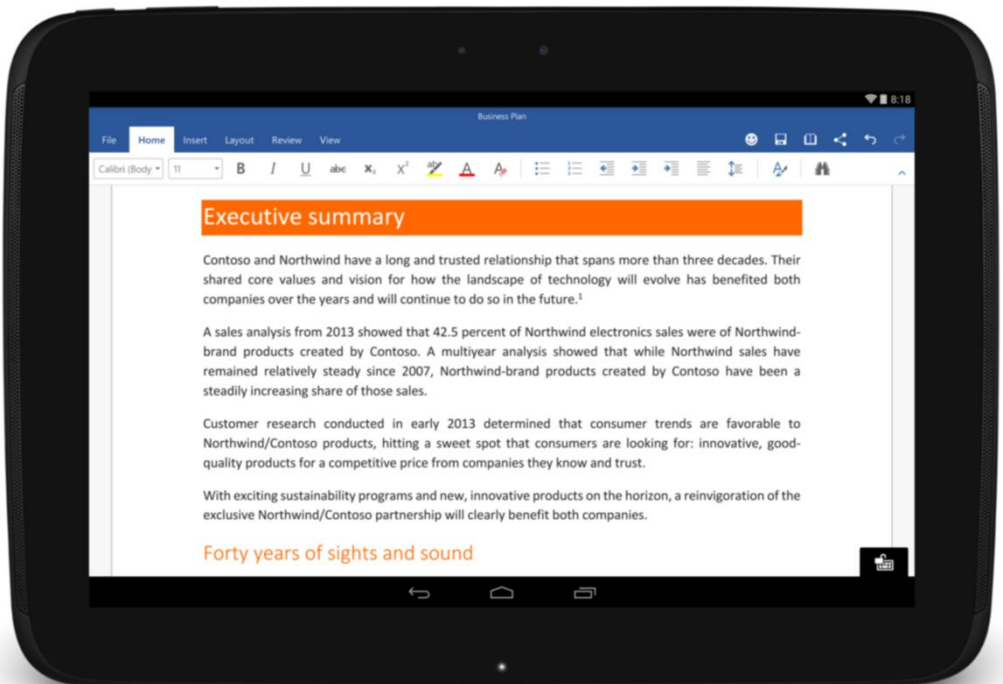
HP's recent hardware history has been unremarkable: decent machines, nothing too daring. But now we have the Sprout. It stretches the capabilities of a PC. Priced at \$1900, it may not sell like hotcakes (it's way too early to tell). But it's HP's bid to have at least one kind of computer that's ahead of the game, and that's a good place to be. 🔌

Hands-on with Office for Android: polished and ready

BY DEREK WALTER

OFFICE FOR ANDROID (go.pcworld.com/officeandroid) is a key piece of Microsoft's conquer-the-cloud strategy. The promise is you can work on any device, yes even on Android, with the productivity suite you know and (maybe) love.

Preview versions of Word, Excel, and PowerPoint have been in the Play Store since November, and we were impressed in our initial hands-on (go.pcworld.com/officeandroidhandson).



I tinkered with the final builds before they went live. While there were no sweeping changes, the apps are maturing into a compelling productivity suite that could challenge the dominance of Google's productivity apps (Docs, Sheets, and Slides) on Android.

Get started with a Microsoft account

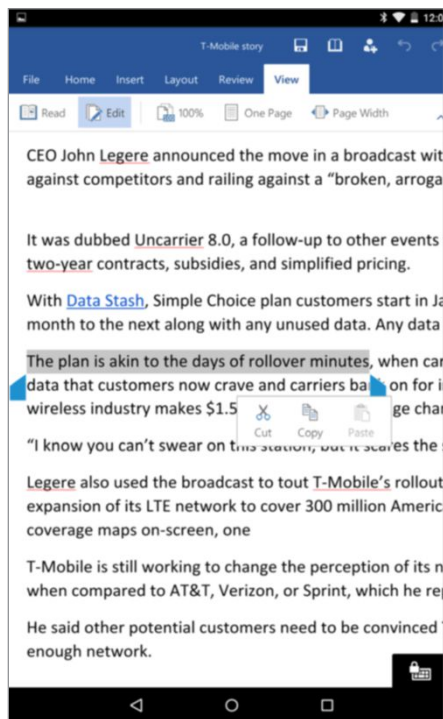
To use and edit each of these Office files, you'll need a (free) Microsoft account. This connects you to OneDrive, Microsoft's cloud syncing service. This way if you start work on a file on your PC, you can tinker away with it from your Android tablet.

The full experience of course is for those with an Office 365 subscription. Microsoft has a rather convoluted mix of which features work with free and paid accounts: check out our breakdown (go.pcworld.com/officemobile) to decide if an Office 365 subscription is what you need.

Along with OneDrive, you can also connect and open files from Dropbox, another piece of fruit from the two companies' recent partnership.

Word will make you feel right at home

What many will appreciate about Word is how familiar it looks to Windows users on archrival Google's mobile platform. Microsoft has done an excellent job at building a familiar interface across its product line, really going all-in with its "cloud first, mobile first" strategy.



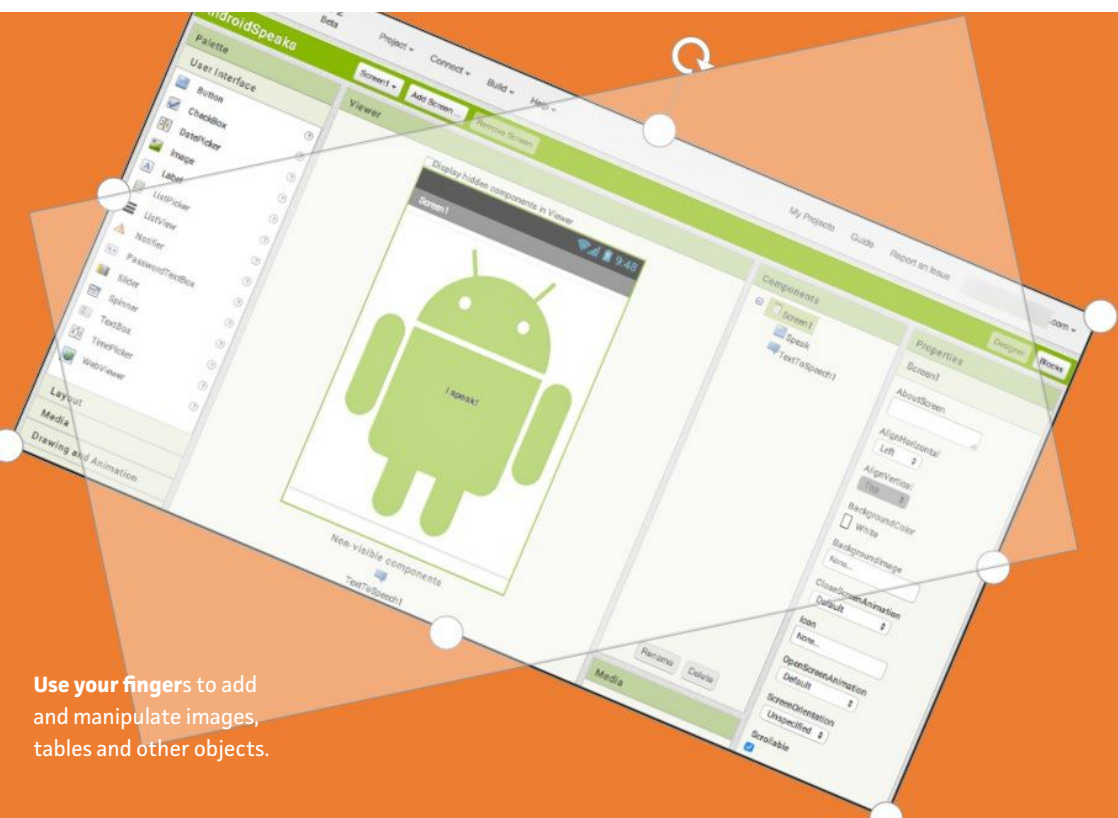
The cut, copy,
and paste
options pop
right up when
you highlight
text in Word.

Of course that means love it or hate it, you get the ribbon. But you can auto-hide it with one touch if you'd rather it not clutter up your view.

Just touch anywhere on the file to edit, or tap and hold to get the smart popup bar for copy-and-paste. I most appreciate the ability to pinch and zoom on the page to zoom in for a closer look at the text. There's also a useful button to hide the keyboard so it doesn't launch if you're just checking out a file in the reading mode.

My favorite find was the pleasant "Welcome back!" greeting that offers to take you to where you left off when re-opening a document. I tried this on a file and was ushered right back to page 6 where I made my last edit.

The only hangup I found was in how Word saves files to OneDrive. For example, with Google Docs there is no save button - everything saves as you go, almost instantaneously. You can even type on a tablet and watch



Use your fingers to add and manipulate images, tables and other objects.

	F	G	H	I	J	K	L
173		1.99	app purchase		25.00	starbucks	
174		139.98	turbo tax		25.00	starbucks	
175		385.64	sf meridian		1063.00	IRS	
176		1.29	app purchase		1599.98	tickets	
177		3.05	google app		1.00	IRS	
178		4.12	google wallet test		70.35	jewelry	
179		7.99	google music		-0.10	interest	
180		61.57	sf meridian parking				
		50.00	of lunch				

Move and edit
columns in Excel
for Android.

the words show up in real time on another device.

Office promises the same, but doesn't quite deliver. Changes made in Word Online or the desktop take a little while to show up in the tablet version. Also, being asked to save a file when closing seems like an unnecessary step, and out of touch with the "cloud-first" world. Microsoft should bring the instantaneous saving that the Internet can deliver.

You can print from Word, along with the other Office apps. When I tried this, it forced me to connect with Google Cloud Print which must be connected to your tablet for printing. The perpetually-in-beta service (go.pcworld.com/cloudprint) is rather clunky, though of course this jagged experience isn't Microsoft's fault.

Excel offers solid number crunching tools

Pulling up a spreadsheet from your tablet can be helpful in a lot of situations, from business meetings to finding that last payment detail.

Doing extensive spreadsheet work on a tablet seems rather painful, but Microsoft hit the right balance here between usability and functionality. For example, you can edit pivot tables, though not create one from scratch. You can add in formulas, and the space for editing this is much larger and finger-friendly than on the desktop.

If you want to move around columns, you can tap and hold them to drag them to a new home. You can take a set of data and create a chart, choosing from multiple types of data representations.

Excel is very fluid and stable, which should please both Excel diehards and those who just want to make sure all their files are synced up while on the go.

PowerPoint is perfect for tablet-based presentations

If there's an app that's best-in-class among the three, it's PowerPoint. It completely blows away Google Slides which is nowhere near parity in terms of templates or slideshow design features.

PowerPoint on a tablet also makes a lot of sense, as it frees you from being locked to a computer when using this app for a presentation. You can also ink up your screen with your finger or stylus while

File Home Insert Transitions Slide Show Review View

New Slide Table Pictures Shapes Text Box

4
5
6
7

App Exercise: Flick

- Flick a ball across the screen
- Requires use of procedures

Notes

Emphasize the necessary procedures.

Add notes or comments to your PowerPoint slides.

SLIDE 3 OF 8

Types of Procedures

- Two blocks: **do and result**
- Do:
 - Collects a sequence of blocks
 - Will run defined procedure
- Result:
 - Provides a result value
 - Creates a new procedure

presenting, which is great for keeping audiences glued in to what you're saying.

While you can tweak the transition and effect options of your slides, unfortunately you can't change up the existing theme. You can move around the order of the slides by dragging and dropping them to a new location. There are several other finger-friendly options built in, making this a real standout application.

The future is Office everywhere

These new editions of Office are essential if you're an Office 365 subscriber, but others will be happy with what Microsoft has cooked up here also. While the company is playing catchup to Google in the Android tablet space, it's stepped on the pedal and isn't far behind. It just needs to keep cranking out the features and honing in on making its cloud performance rapid and reliable. 🔌



Lenovo Horizon 2s advances portable, tabletop computing

BY JON L. JACOBI

WHAT DO YOU call a tablet that's large enough to serve as your desktop computer? A Lenovo Horizon 2s (go.pcworld.com/horizon2s). What do you call a battery-powered all-in-one that's small enough to carry? A Lenovo Horizon 2s. What do you call a computer that lies on the table and offers an engaging experience for two or more people? Atari Pong! Or, the Lenovo Horizon 2s, of course.

Atari Pong, the first commercially successful arcade game, was available in a cocktail table version. Two people sat around it, sipping

aperitifs while twisting a knob that moved a virtual paddle about the screen to whack an electronic pip. That socialize-around-the-table, board game-like functionality and interaction is part of what Lenovo's aiming for with the Horizon series, and in particular—the 2s. The company provides a 360-degree interface called Aura that makes a Horizon usable when it's lying flat, bundles special games, and will sell you striker paddles (think air hockey), joysticks, and e-Dice as options. The whole deal is pretty slick. Really.

The Horizon 2s, unlike its rather large and heavy 27-inch Horizon 2 cousin and others of its ilk, might strike users as a giant tablet. Though it's astoundingly light for the transportable all-in-one, at 5.45 pounds and with a 19.5-inch, 1920x1080 touch screen, it's actually not usable as a tablet by a normal-sized human being. However, once you start thinking of it as a desktop-to-go, the appeal is clear. Keep it in your office for work, then carry it at need to the kitchen, garage, or yes—coffee table. Recipes, DIY videos, Parcheesi, whatever.

The Horizon 2s has an integrated kickstand to prop it up at a fixed



When you're not docked, a pop out kickstand keeps the Horizon vertical.

angle, though the optional charging stand which leaves the surrounding area unobstructed, is a far better solution for long-term use. Sadly, said handsome stand doesn't add any ports to the mix, and at \$90, it sends the \$949 Horizon 2s (our Best Buy SKU) over the \$1000 mark. Gulp.

Getting back to the multi-user interactive role... The aforementioned Aura interface, which launches from Windows, features a wheel (think digital lazy Susan) in the center of the screen that you can rotate to bring any component (music, games, photos, etc.) in line with your personal horizon

(no pun intended). You can tear off elements, drag them around, and rotate them as well. It raises some extremely interesting possibilities for games and even design, and some of the 21 games that Lenovo provides take good advantage of the metaphor. Aura U runs Android apps, so you there's a lot of stuff you can play with on the Horizon 2s. It's especially nice to see a computer function as something other than an electronic cocoon.

As much as I like Aura, when it comes to the Windows 8.1 operating system the Horizon 2s ships with, Lenovo—as do other vendors—slops on the “value-added” software utilities. Remove them ([go. pcworld.com/bloatware](http://go.pcworld.com/bloatware)). You don't need a bunch of stuff running in the background or popping up checking your hardware while you're in the middle of something else. Windows takes care of most everything you need, including anti-virus/malware protection, just fine—and more politely.

I'm not a huge fan of glossy displays, but they make some sense when there's touch involved.

Hardware

I'm not a huge fan of glossy displays, but they make some sense when there's touch involved. Lenovo must feel my pain because the company employs an anti-glare coating. It works decently well at reducing reflections and doesn't highlight fingerprints; however, it

also makes the unlit display look as if it hadn't been cleaned in a while. A small price to pay, but don't go scrubbing it thinking it's dirty.

The Horizon 2s has only a few ports, though the selection is adequate for the intended usage. There's a docking port on the bottom; a card reader, volume rocker and power switch on the right; plus a headset jack, two USB 3.0 ports and the power jack on the left. Wireless communications are top-notch: 802.11ac, Bluetooth 4.0



You get two USB 3.0 ports, plus the Lenovo combo jack and an analog audio port.

Lenovo Horizon 2s

PROS

- Unique 360 degree interface
- Easily moved about
- Unique coffee table gaming abilities

CONS

- Somewhat noisy fan
- No SSD option
- Less than 2-hour battery life

BOTTOM LINE:

The Horizon 2s is a wonderful concept. But it's expensive, there's no SSD option, and it has a noisy fan. Regardless, it's well worth checking out for its Aura 360 degree interface alone.

\$949



and NFC. Both the keyboard and mouse are wireless. The keyboard types well and the mouse is responsive, but the overt hump on the latter, while attractive, feels awkward.

I wasn't a fan of the fan—or the hybrid drive

I really bought into the portable desktop/tabletop concept after just a few minutes with the Horizon 2s, but it was a bit disturbing to see Lenovo drop the ball on two fronts. The first was an irritatingly noisy fan. I know there's a Core i5 4210U and 4GB of memory in there, but the first unit Lenovo sent me whined ceaselessly at varying pitches—especially when a heavy computing load such as



The Horizon 2s is far more portable than its 27-inch sibling.

PCMark was applied. Lenovo sent me another which wasn't quite as noisy, but then my office was quite a bit cooler with a recent cold snap.

The second issue was the lack of a fast, shock-immune SSD option. The Best Buy SKU that I tested had a 500GB Seagate ST500LX012-SSHD-8GB Hybrid (SSD/HD). Hybrid drives are marginally faster than hard drives, so I'd rather pay another \$50 for an SSD. At \$749, I wouldn't complain about a hybrid drive. At nearly a thousand bucks, I am.

Performance

During my subjective testing, there wasn't a lot to complain about with the Horizon 2s. Unlike the recently reviewed HP Beats AIO (go.pcworld.com/hpenvybeats), Windows and programs open decently fast. Objectively, PCMark rated it at 2779 in the Work test and 2077 in the Creative test. It scored well in 3DMark's Ice Storm Extreme, a tablet test, but it performed as you'd expect from Intel HD 4400 graphics at higher resolutions and detail settings—not very well. Encoding a 30GB MKV file to tablet format took about 2 hours and 13 minutes. Not bad. Not great. By comparison, PCWorld's reference system, with its quad-core Core i7 4770K chip, takes about 36 minutes. That's not a desktop system you can carry with you, though.

A minor issue is the Horizon 2s's short 1-hour, 43-minute battery life. Admittedly, it's not that hard to plug in an AC adapter, and the Horizon

2s isn't really a travel computer, but social gaming can be addictive. Just saying—there's a chance for annoyance there.

Not to beat on the lack of an SSD, but CrystalDiskMark rated the hybrid drive at 116MBps reading and about 106MBps writing. It illustrates the marginal benefit of hybrid drives, and it's only one-third the performance you'll see from even a cheap SSD. Tests can sometimes be misleading, but it definitely lacks that SSD rush.

Conclusion

I didn't expect to like the Horizon 2s as much as I did. Mostly because I was thinking of it as an oversized tablet instead of a svelte, portable all-in-one. Forgive me, Lenovo. Now I can easily see it functioning at need about the house and yard and on the coffee table in the den or living room.

So conceptually, the Horizon 2s is a winner. Lenovo marred the reality slightly with a noisy fan and bean-counter nonsense like the hybrid drive. Still, major kudos for going someplace new with Aura—even if that place is actually quite old. 🔌

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Helpful tips, critical reviews, and expert
analysis for passionate Android users
of every experience level.

www.greenbot.com





I spent a week with the Galaxy Note Edge, and now I hate curved tablets

BY FLORENCE ION

I BARELY LASTED a week with the Samsung Galaxy Note Edge (go.pcworld.com/galaxyedge).

Here's the gist: I was really excited when I received word that the Verizon variant of Samsung's phablet-sized curved phone was on its way. I was eager to try something different from the usual cadre of flat-faced smartphones that rule the Android world. The Note Edge had a certain *je nais se quoi* about it, too—something I hoped extended beyond just its curved right edge and would convince me the display wasn't just a gimmick, as I'd thought when I first laid eyes on the phone last year (go.pcworld.com/galaxynote4).

But I was wrong. There's really nothing special about it. The Galaxy Note Edge seems to be nothing more than an experiment from Samsung to see what customers want from a curved phone. That's fine, except that this science project costs an exorbitant amount of

money—about \$400 with a two-year contract, or \$800 off-contract on Verizon. But even worse, the phone's flagship feature offers nothing more than an extra bit of space where you can dock application icons.

With all this talk about Samsung possibly debuting a curved flagship at Mobile World Congress, I figured now would be a good time to share my complaints with Samsung's first curved device in the US. But before we get into the negatives, let's quickly talk about what I did like.

What works

Inside, the Galaxy Note Edge is essentially the Galaxy Note 4 with a curved display panel. The major difference is the smaller 3,000mAh battery pack in the Note Edge (the Note 4 battery pack is rated at 3,220mAh). The Note Edge also comes bundled with all the software bells and whistles of its counterpart, including the ubiquitous S-pen.

It's all rather redundant if you have a Note 4, but the Note Edge has a leg up in the revolving interface of the curved right edge. It's aptly called Revolving UI, and it's like a multifunctional version of the Mac OS X dock. You can cycle through the UI as needed, and it goes into hiding when you're in a fullscreen app like S-Note or Twitter.

I primarily used the panel to store app shortcuts and view at-a-glance notifications, though you can also use it as a news ticker, step counter, or as a fun "side



From the top, the Galaxy Note Edge doesn't look much different than the Note 4.

game” if you download the appropriate app for it from Samsung’s own app store. There’s even a toolkit of sorts that you can use by pulling down from the top. It includes tools like a flashlight, voice record, and a ruler.

Eventually, I grew accustomed to cycling through the panels to get what I needed. I liked that there was one specific part of my phone where I could store app icons. My Home screen had never looked so perfectly manicured. I also really liked some of the Edge-only features, like the Night Clock. It’s an optional mode that dimly displays the current time and your next alarm just in the Note Edge’s curved bar. You can set when this particular feature shows up, too. In my case, I liked to have the clock on between 10pm and 6am.



The curved portion of the screen acts like a sort of dock for your favorite applications.

What doesn't work

The Note Edge may employ the same brightly colored Super AMOLED display as the Note 4, but the asymmetrical shape of the phone makes it awkward to hold up to your ear to conduct a phone call. I kept feeling like I was going to accidentally launch an app from the dock. It's hard to hold the phone with just your shoulder, too.

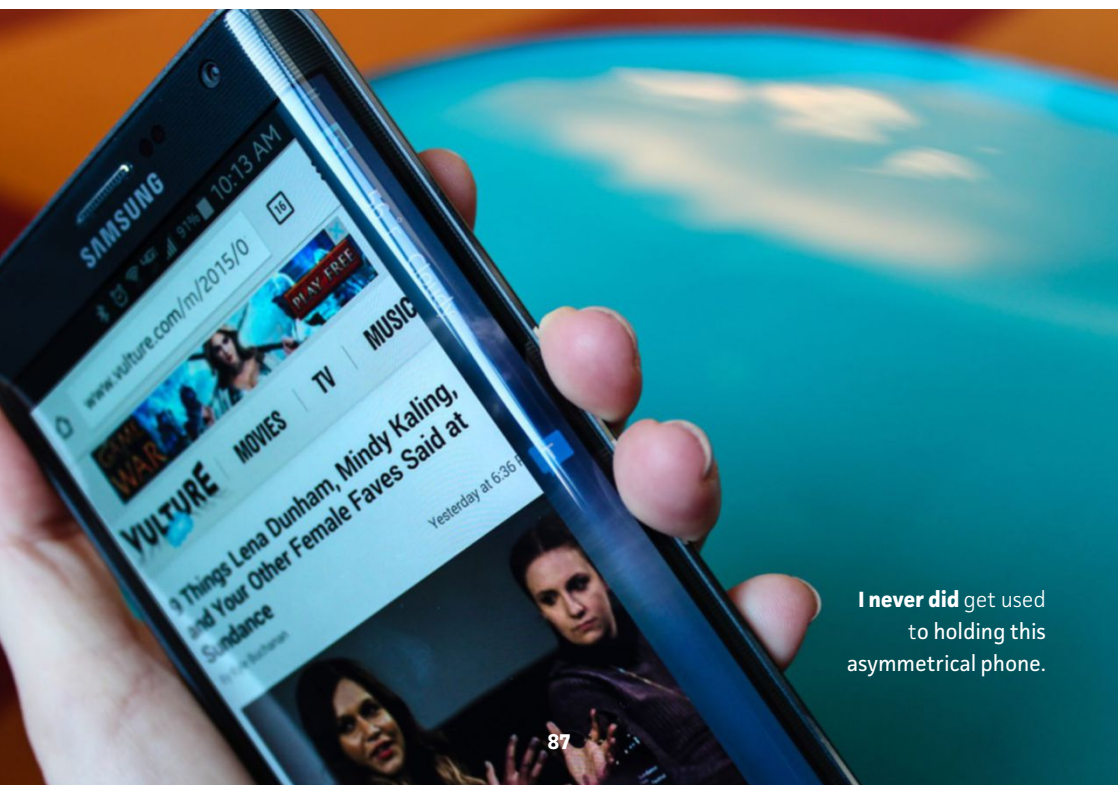
Left handers, you're also out of luck. The Note Edge seems to be specifically catered for the right-handed. There's a setting that lets you flip the phone 180-degrees so that you can use it, but that will require you to learn how to use the phone upside down. You'll also have to flip the phone right-side up to take a call.

Some apps don't work well with the curved screen either, like Samsung's camera app, which embeds the shutter button within the curve of the display. Again, it's awkward to tap. I felt like I was going to

drop the phone while snapping photos of my friends. I opted instead to use the volume rocker on the side as the shutter button to get a better grip of the device.

I also failed to see much benefit from the “second screen” experience. While I liked having notifications roll in and out on the side (rather than popping up and bugging me while I was doing other stuff on the main screen), there were several instances when Android couldn’t figure out where to deliver a notification. This resulted in several missed phone calls and Facebook messages—something I don’t particularly appreciate when I’m using my phone to sync up with pals at the park.

Now, lump all that on top of the fact that the Galaxy Note Edge still uses Samsung’s blue-hued TouchWiz Nature UX, and you’ve got an Android experience that’s just not worth paying for.



I never did get used to holding this asymmetrical phone.



The Galaxy Note Edge looks interesting, but the curved edge of the screen won't do much to enhance your smartphone experience.

Save your money

There are two things I ask myself when I'm using a smartphone: Does it look good and does it work well? For the most part, the Galaxy Note Edge looks interesting enough that you'll get friends asking about its weird design, but the curved edge of the screen won't do much to enhance your smartphone experience. Why not opt for the cheaper Galaxy Note 4 instead? Seriously—it's \$100 cheaper!

The Galaxy Note Edge is merely an experiment. I understand why Samsung would put the device out in the wild, and it makes sense given the company's penchant for "trying things out," but this isn't an experiment like the Gear VR. It's a smartphone that you're supposed to use throughout the day for everything. I would have rather Samsung put its efforts into trying out a subtle-y curved display like the upcoming LG G Flex 2 (go.pcworld.com/lggflex2), which I impressed me the minute I laid eyes on it at CES (mind you, I wasn't a big fan of the first generation G Flex either). Hopefully we'll see something like that from Samsung at Mobile World Congress in Barcelona. 🔌

Four hour hands-on with Witcher 3: Wild Hunt

BY HAYDEN DINGMAN

IT FINALLY HAPPENED. After two years of hands-off demos, multiple delays, and et cetera, I finally got my grunny hands on *The Witcher 3* (thewitcher.com)—not just for a piddling few minutes or a tightly controlled demo, but for four hours. CD Projekt basically sat me down at a computer, booted the game, and said “Go.”

And I went. I finished off the tutorial, completed a half-dozen side quests, and got through the story basically to the end of what I’ll call “Chapter One.” In other words, right when things started to get interesting? That’s when I ran out of time. Here’s what I noticed, nevertheless.





On tutorials

I love *The Witcher 2: Assassins of Kings*. I loathe *The Witcher 2*'s non-Enhanced Edition opening.

If you haven't played it: You get off a ship as Geralt (the titular witcher of *The Witcher*, a.k.a. a professional monster hunter). Geralt finds some wounded knight guy sitting on the road. You find him some herbs. You heal him. You proceed up the road to an arena. You fight a bunch of enemies using *The Witcher 2*'s bafflingly sticky and overcomplicated combat system. You eventually die. The game says "You are terrible. You should play the game on Easy." You decline and continue to play the game on normal. You enter a city. There are a billion things to do. You don't know what to do or what's important. You turn off the game.

That's literally how I started *The Witcher 2*. The "find this guy some herbs" thing sucked. The lack of context sucked. The arena sucked. The city sucked at conveying what was important. Basically, everything sucked until about four or five hours in, when you finally got your bearings.

The Witcher 3 fixes all my problems. The tutorial takes place in Kaer Morhen, the stronghold of the witchers. Veterans of the series will recognize Vesemir and other characters, while for newcomers there's a healthy dose of context given through various conversations.

And it all flows very nicely into the game itself, which plops you into the town of White Orchard to look for an old companion. White Orchard is basically a smaller subset of *The Witcher 3*'s larger open world, so think of it like the entire game in microcosm—do some side quests, explore a bit, and then when you're ready you can move on.

Vesimere also sticks around, which helps because Geralt has someone to talk to, a.k.a. someone whose conversations can give some context to the world. Did you know Nilfgaard is conquering Temeria? Do you even know what that means? Well, if you don't, it's not a big deal. Vesimere will explain. That's a huge change from the previous game, which for some reason hoarded context and made the first few hours a nightmare to understand.

On size

The Witcher 3 is enormous. White Orchard is clearly meant to be the "small" area in *Witcher 3*, and after four hours, I'd barely explored half of it.

Conversations with

Vesimere give some context to the world.



It's not a single open world, contrary to what I thought going into my demo. Instead, it's more akin to the previous *Witcher* titles or (even more relevant) *Dragon Age: Inquisition*. There are three or four major areas to explore, each with its own open world. However, these are discrete maps you travel between.

You can't, for instance, sail from Skellige to Novigrad. Instead, you go to the world map and "travel" to Novigrad. I asked why and was told it's because CD Projekt wanted to keep the geography of the realm consistent, while still representing all these areas. Basically, they know it would take hours of game-time to sail to Skellige, so instead you just fast-travel there.

I spent most of my time in White Orchard, only getting quick glimpses of Skellige and Novigrad. All three areas seem gigantic, though I think *Dragon Age: Inquisition* (go.pcworld.com/inquisition) is probably a larger game overall.

The Witcher 3 is enormous. After four hours I'd barely explored half of it.

On controlling Geralt

Combat has always been the weak spot in *The Witcher*, but I think CD Projekt's finally figured it out. The controls actually seem pretty similar to what we had in *The Witcher 2*, but animations are more fluid and Geralt is just generally more responsive. It now plays wholly like an action game and less like the weird action/strategy hybrid of *Witcher 2* and (even more so) *The Witcher*.

What I'm calling "Act One" ends with the gryphon battle that CD Projekt's been touting, and while combat's not on a level with *God of War*, it's at least fluid and functional enough that the encounter feels momentous.

Some other things have been simplified. Geralt's "Witcher Sense," which highlights important objects in the world, is now an infinite resource accessed by holding down the Left Trigger. It's a lot like Batman's "Detective Mode" in the *Arkham* games now, and you'll put it to similar uses—tracking enemies, looking for clues, and the like. One quest had me

sussing out why a noonwraith was haunting a village. I mean—I still killed it after I figured out why, but at least I knew the reason.

And lastly, exploration. Now that Geralt's got this big, open world to uncover, he's a lot more nimble. He climbs things. He jumps on things. He sprints. He rides horses. He jumps off horses. He swims.

Geralt 3.0 has been working on his CrossFit, apparently.

On shades of grey

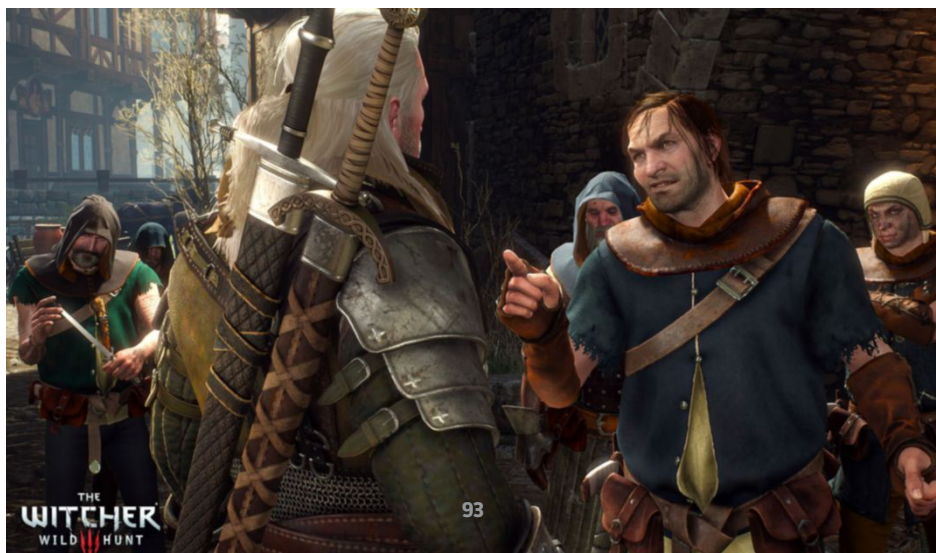
None of the above really matters though. The core of *The Witcher* is story. Unfortunately I haven't gotten to see any of the long-term effects CD Projekt's talked about—help a town and see it flourish, hurt a town and see it eventually crumble into ruins. I did make a fair number of choices during my time with *The Witcher 3*. Not all of which I'm happy about.

For instance, there's the dwarven blacksmith I helped out. I came upon the blacksmith in White Orchard. He looked pretty despondent, which made sense because someone had burned his forge to the ground.

Nobody knew who did it. Or, at least, nobody was saying.

Why they did it—that was an easier question to answer. White Orchard recently fell to the hated Nilfgaardian army. Looking to replenish its supplies, the army co-opted the blacksmith to make weapons and armor.

Be careful who you help. Things are not always as black and white as they seem.





Seeing as a witcher's job is mostly to hunt down monsters, this didn't really fall under my jurisdiction. It wasn't a monster that did the burning. Even the blacksmith admitted that. But Temeria's a hard place, especially in wartime, and I felt bad for the guy. I figured I'd find the arsonist—maybe force him to help with repairs.

I found the criminal holed up in a shack near the river, limping from a wound he sustained during his escape. I brought him back to the blacksmith, feeling like I'd done a good deed, and then everything went wrong.

"Guards! Guards!" shouted the blacksmith, drawing the Nilfgaardians down on us. "This is the man who burned down my forge." And the soldiers took the criminal and executed him. Which was not at all what I meant to happen.

The Witchers made a name for itself off this sort of stuff—feeling like you're helping, only to find out you've made the wrong decision. Or, at least, that everything's not so black and white as you originally thought. As far as I can tell, that core is still intact. Even the overarching war drama is morally grey. You meet the Nilfgaardians fairly early on,


He climbs things,
jumps on things,
sprints, rides
horses, jumps off
horses and swims.

and they seem reasonable. But everyone you meet hates them. Or there's the gryphon, which you find out. I'll let you discover that one for yourself.

Bottom line

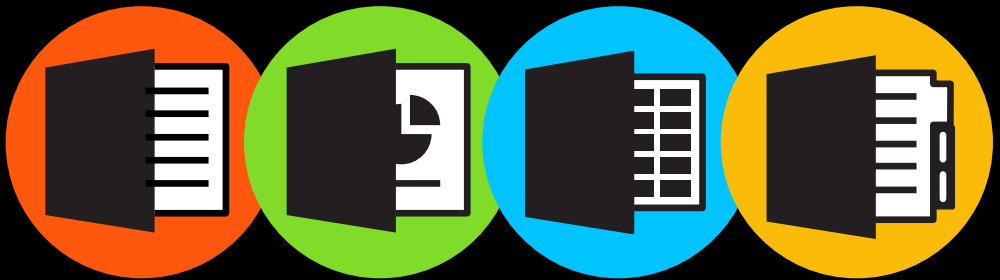
By my estimation, I've played between 1/6 and 1/25 of *The Witcher 3*. It was fantastic. I try not to get too hyped about games prior to release, but whereas most people were flipping out about how great *Dragon Age* was last year, this is my RPG series of choice, and I can't help feeling that ol' familiar excitement in my stomach.

It met my expectations. It surpassed my expectations. I'm excited. I think you should be excited. Maybe that's irresponsible, but I'll be driving this hype train straight into hell.

All aboard. 



Office ONLINE vs. Office 365



What's **free**, what's **not** and
what you *really* **need**

BY BRAD CHACOS



MICROSOFT OFFICE,

once an expensive investment (or furtive appropriation), is now available in free as well as paid forms, on basically any device with a screen.

.....

And the goodies keep coming. The original, browser-based Office Online has steadily gained features. Microsoft also recently revealed that Office for Windows 10 apps will be preinstalled and free (go.pcworld.com/10free) to use on Windows 10 smartphones and small tablets—joining native, no-cost apps that already exist for iOS and Android.

At the same time, Microsoft has added a number of perks and incentives that make the subscription-based Office 365 a very attractive upgrade.

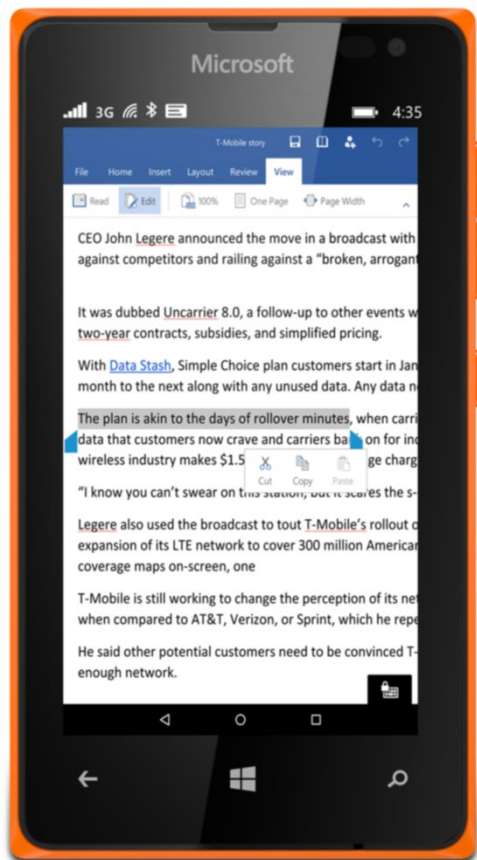
The challenge is no longer access, but choosing the right version for you. Here's how to decide which to use.





WHAT'S FREE

Office Online offers the core four: Word, Excel, PowerPoint, and OneNote—the same as you'd get with the Office Home & Student 2013 suite. You can also use Outlook.com for email rather than paying for Outlook. Factoring in all five, you have the equivalent of the Office Home & Business 2013 suite—for free.



With both the Office Online apps and the Office apps for mobile devices, though, the versions that Microsoft provides for free have limited functionality compared with the paid equivalents.

For example, if you compare the Home ribbon in Word Online with the Home ribbon in Word 2013, the two are almost identical. You can copy, cut, and paste, change the font characteristics, and so on. A few features you might miss: Word Online lacks the Format Painter feature that lets you copy formatting from one section to another, and it doesn't have a few of the font options, like Text Effects and Typography, or Change Case.

Word Online has the basic paragraph formatting options, including bulleted or numbered lists, and the ability to align text left, right, or center. However, it

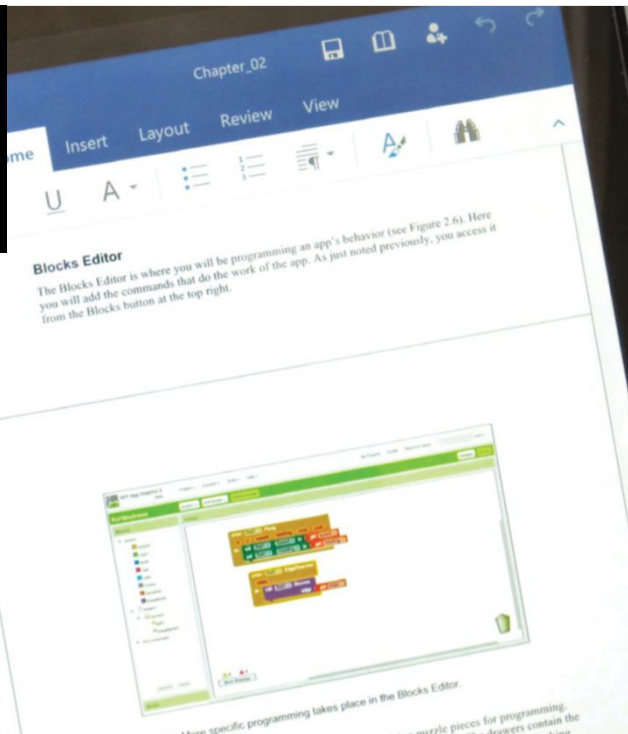
doesn't have some of the features available in Word 2013, such as shading, borders, or multilevel lists.

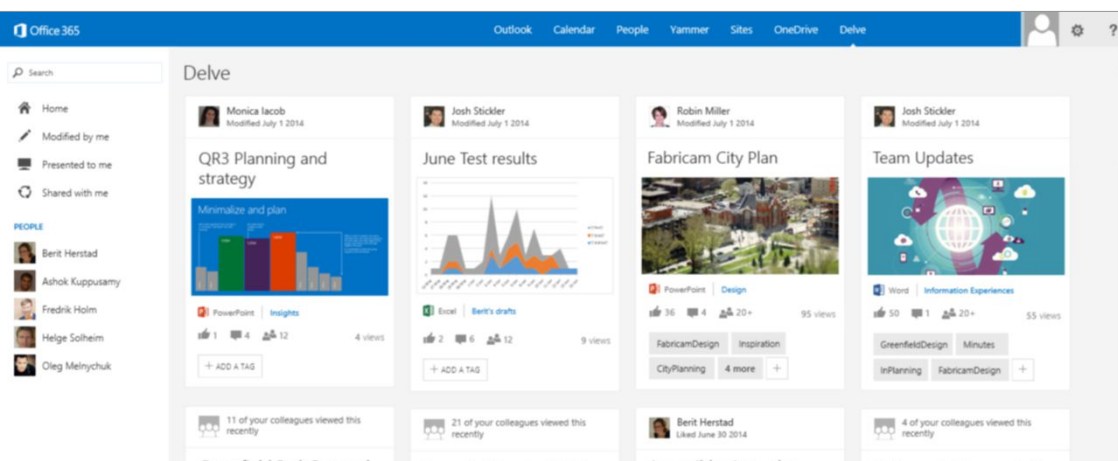
Where the real difference comes in, though, is the ribbon options that simply don't exist in Word Online. If you look at the tabs across the top of the ribbon, you'll see that Word 2013 has two ribbons that don't exist in Word Online: References and Mailings. Mailing allows you to print envelopes and labels and manage mail merge printing of Word documents. References contains features you need for more advanced

documents—things like table of contents, citations and bibliography, captions, index, and table of authorities. Footnotes is also part of the References ribbon in Word 2013, but it's available in Word Online under the Insert ribbon.

With the mobile apps, users can view, create, and edit Office documents for free, and sync those files with Microsoft OneDrive or Dropbox cloud storage. However, only paying customers are able to do things like change track or accept changes, or format text into columns.

Office for Android shipped in January, joining Office for iPad as a free, native application for mobile users.





Office 365 subscribers have access to the Delve content management tool.

WHAT'S NOT

If you need more than basic document creation and editing capabilities, the free Office Online apps aren't for you. Getting access to the more advanced functionality requires investing in the Microsoft Office suite.

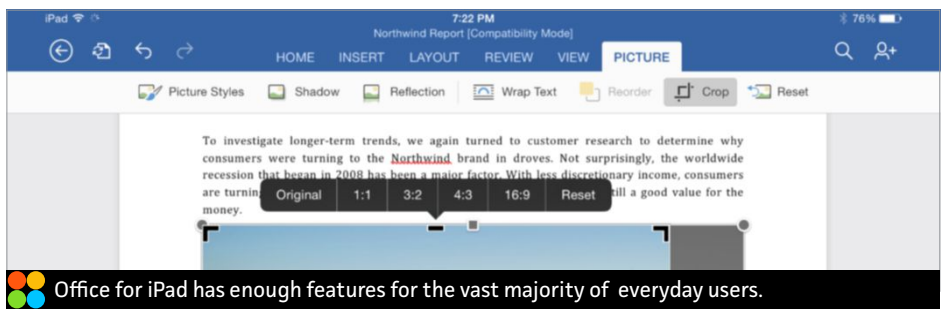
Microsoft offers Office 365 Personal and Home subscriptions, as well as a variety of plans for businesses of all sizes. Office 365 Personal is \$7 per month (or \$70 per year). Office 365 Home costs \$10 per month (or \$100 per year) and can be shared by up to five individuals. Office 365 business plans include some features aimed specifically at business users, and are billed differently—starting at \$8.25 per user, per month, if you want the

full Microsoft Office suite.

No matter which of these Office 365 plans you choose, each user also gets the full Office Professional 2013 suite for either a Windows or Mac PC. The Office 365 subscription also unlocks the full functionality of Office on a tablet or smartphone and provides additional perks like Skype calling minutes and unlimited OneDrive storage instead of the 15GB Microsoft provides for free OneDrive accounts.

WHAT YOU REALLY NEED

The Office Online applications are enough for most people. Word, Excel, PowerPoint, and OneNote cover the things the vast majority of people use from the Microsoft Office suite. Factor in Outlook.com, and the free Office Online tools seem to cover the bases.



The free Office mobile apps have limited capabilities. They allow users to create, view, and edit files and include the basic features most users rely on.

If you need Access or Publisher, though, Office Online won't work for you. In order to get either of these apps as part of a suite, you have to buy Office Professional 2013, or subscribe to Office 365—which comes with the rights to install Office Professional 2013 on multiple machines. And if you want to be able to do things like change the orientation of a document, insert section breaks, or other

advanced functions from a tablet or smartphone, you'll have to sign up for Office 365.

The question you have to ask yourself is whether those features matter. I've spent the vast majority of my waking hours in Microsoft Word for more than a decade. I have never—not once—used the features under Citations & Bibliography, or Index, or Table of Authorities, and I have never performed a mail merge. The only feature missing from Word Online that I do use on a fairly regular basis is the Table of Contents.



SIZES TO FIT ALL


The verdict? Simple: Office Online tools are more than adequate to meet needs of most users. The only serious handicap to keep in mind is that you must be connected to the Internet in order to use Office Online, whereas the locally installed Microsoft Office suite is available for use regardless.


That may not be a deal-breaker in and of itself. There are free public Wi-Fi hotspots all over the place, and how likely is it, really, that access to the Office applications while you're not connected to the Internet will be a crucial issue for you?

That said, the unlimited OneDrive storage alone is worth \$7 a month, and

the Skype minutes would cost \$1.38 per month to purchase separately. When you add up the perks in Office 365, it's like you're actually getting Microsoft Office for free, and still getting a discount on the additional features as well.

A number of features and perks come with Office 365, and I still highly recommend subscribing to the service, but the reality is the vast majority of users can get by just fine using the completely free Office Online.

You'll have even more choices soon. Microsoft announced that Office for Windows 10 and Office 2016 (go.pcworld.com/updates) will be released late this year. We don't yet know what new features or capabilities will be included in the touch-friendly Windows 10 apps, nor the new version of the desktop suite, or whether any of that will bleed over to the free Office Online offerings. 



...how likely is it, really, that access to the Office applications while you're not connected to the internet will be a crucial issue for you?

NOVELS ROCK 'N' ROLL
STAND-UP COMEDY JAZZ
VIDEO GAMES MOVIES
COMIC BOOKS TALK RADIO

EVERY NEW ART FORM HAS ITS FIGHT FOR FREE SPEECH.

OUR TIME IS NOW
FIGHT FOR YOUR VIDEO GAMES



V I D E O G A M E V O T E R S . O R G

10

MUST-HAVE

CHROMECAST

APPS



FOR STREAMING DIGITAL
MOVIES, VIDEO, & MUSIC

BY DEREK WALTER



GOOGLE'S CHROMECAST IS the perfect gadget to have if you're looking for the simplest way to stream movies, TV shows, YouTube (and other web videos), and music from your mobile device to a TV. Just plug the Chromecast into one of your TV's HDMI inputs, download the official app, and start streaming.

Whether you're new to the Chromecast party, or the device is a permanent part of how you watch content, you should have this collection of apps in your library. You can find even more by searching the Google Play (go.pcworld.com/gp) store for titles that support "Google Cast" (the official name of Google's streaming technology).

Whatever you like to watch, you're bound to find something that suits your taste. So consider our list a jumping-off point.



NETFLIX

The king of streaming was one of the first to get on board with the Chromecast. If you're a Netflix (go.pcworld.com/ccnetflix) subscriber, you can browse through the available movies and TV shows faster with this app than you can with the software on smart TV or Blu-ray player. If you don't have a subscription, you can sign up for a free 30-day trial.

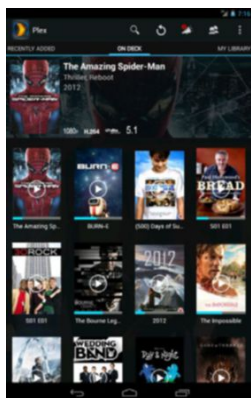
HBO GO

HBO Go (go.pcworld.com/cchbo) offers an incredible amount of the TV network's catalog of original movies, TV series, sporting events, Hollywood movies, and documentaries. It will become even better when HBO delivers on its plan to offer direct HBO Go subscriptions. Until then, you'll need to pay for a cable or satellite TV service provider (or borrow at go.pcworld.com/share) another paying customer's login credentials).



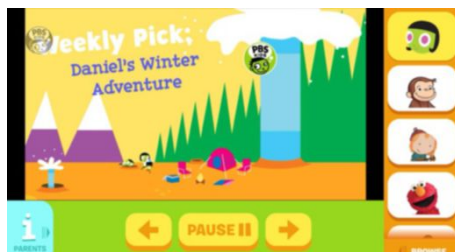
PLEX

If you have a large collection of movies and TV shows on your hard drive, Plex (go.pcworld.com/ccplex) is the best way to get it from your computer to your television. The \$2 app pairs with the free Plex Media Server on your PC for a pretty seamless setup. The app can then pull content from your computer and stream it to the Chromecast, freeing you from the need to connect your computer to the TV.



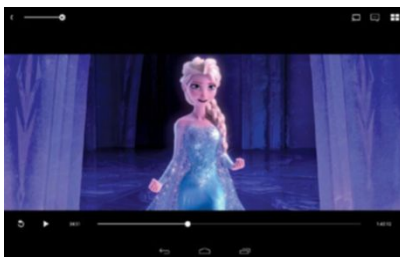
PBS KIDS

Sometimes streaming isn't for you; it's to keep the little



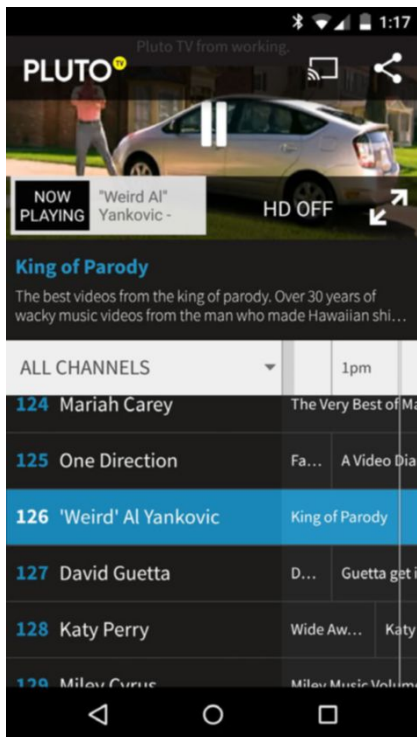
ones entertained. With PBS Kids (go.pcworld.com/ccpbs) you get a lot of educational content. You can feel good that you're not just letting your kids' brains rot. The app brings a "Weekly Pick" video that focuses on reading, science, math, or other enriching topics. You can also add videos to a favorites list or to get suggestions for similar content.

DISNEY MOVIES ANYWHERE



If your children haven't annoyed you enough with repeated viewings of Frozen, then Disney Movies Anywhere ([\[pcworld.com/ccdisney\]\(http://go.pcworld.com/ccdisney\)\) may help you find something else for them to watch from Mickey's massive catalog.](http://go.</p></div><div data-bbox=)

Sign up for a free account and you can stream any Disney movies you've purchased through iTunes, Google Play, or DVD and Blu-ray discs that include a digital-download code. It's great for a trip because you can just grab your tablet or smartphone and a Chromecast instead of stuffing a bag full of DVDs.



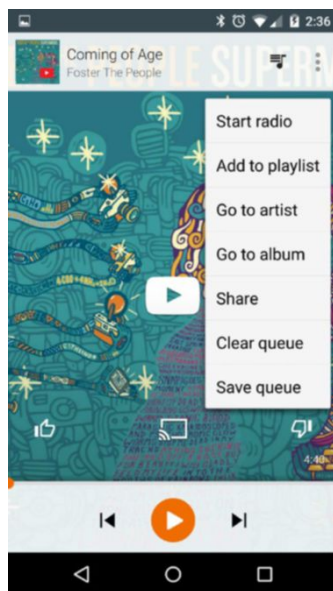
PLUTO TV

This one's for the cord cutters. Pluto TV (go.pcworld.com/pluto) is essentially a free TV service. While it doesn't come with support from any of the major network channels, it does have some surprisingly good content, including CBS News, the Associated Press, and many music video and comedy channel offerings. When you sign up, let the app know what types of video you're interested in. Pluto will build a custom guide tailored to your interests.

GOOGLE PLAY MUSIC

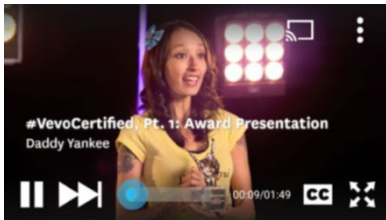
Google Play Music (go.pcworld.com/gpm) works extremely well with Chromecast. Cast the music from your account to the TV, or use your All Access paid subscription to listen to anything in Google's catalog.

This is a great service for when you want to control the play list. All you need is your phone to cycle through the tracks. It's even better with YouTube Music Key (go.pcworld.com/key), as it alerts you to music videos associated with the song you're listening to.

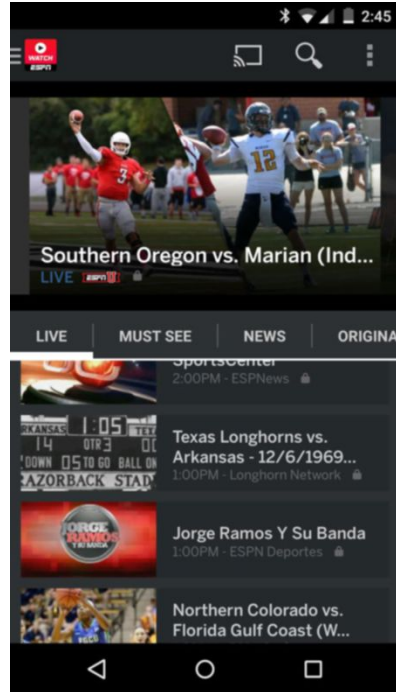
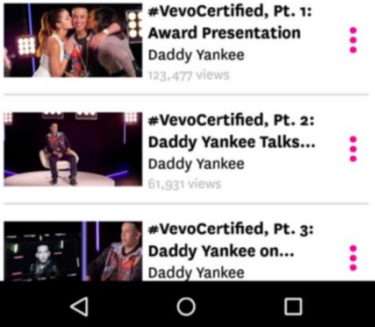


VEVO

Vevo (go.pcworld.com/ccvevo) has become the king of music videos, with most top artists hosting their new recordings on the site. Search for your favorite artist or browse through the suggestions, which typically highlight what's popular. You get more options, such as bundling your preferred musicians or genres, if you sign up for an account.

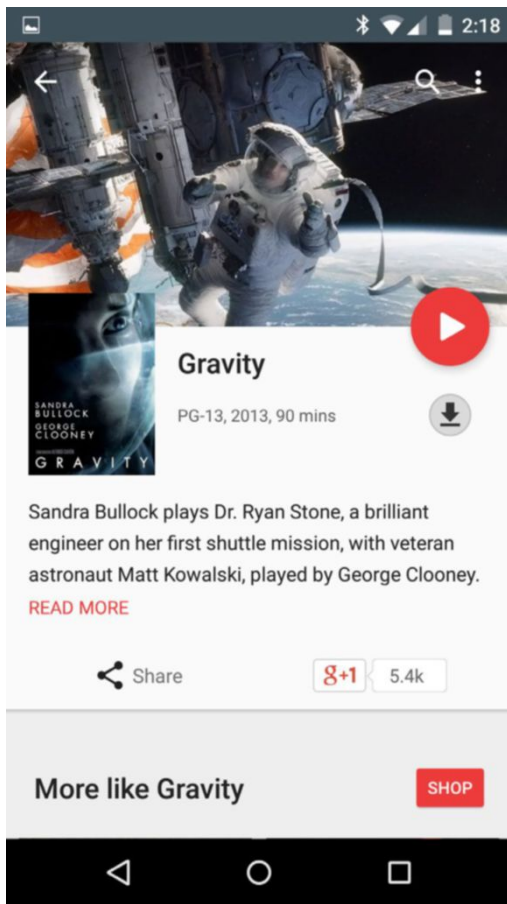


PLAYLIST VIDEOS



WATCH ESPN

The sports broadcasting behemoth turns your Android device into a virtual ESPN. Watch ESPN (go.pcworld.com/espn) has Sportscenter videos, highlight reels, and live events. You do, however, need to have a cable or satellite subscription in order to watch content. So for it's not for cord cutters now, but it adds some nice flexibility in being able to watch your sports programming on a TV that's not connected to your pay-TV service.



GOOGLE PLAY MOVIES & TV

Google has put a lot of effort into its movie and TV platform (go.pcworld.com/play), as you can find just about anything from the major studios or television networks. Google has also been known to give away movies; most recently, *Gravity* and *The Lord of the Rings*. Once a movie is in your account, you can watch it anywhere at any time. And since Google Play Movies & TV is a cross-platform service, you can watch your purchased content on an Apple TV or any web browser. With the Chrome and Android apps, you can also save your videos for offline viewing.

THAT'S A WRAP

We've named our 10 favorite Chromecast apps here, but you'll find plenty more in the Google Play Store. What do you think of our list? Did we miss any of your favorites?



**“ SURE,
AT FIRST I WAS A LITTLE TAKEN ABACK
BY THE WHOLE PEEING STANDING UP THING.
BUT I TAUGHT HIM TO THROW A STICK
AND NOW HANGING OUT WITH HIM
IS THE BEST PART OF MY DAY.”**

**— EINSTEIN
adopted 12-09-10**

**A PERSON
IS THE BEST
THING TO HAPPEN
TO A SHELTER PET**

 **adopt**

theshelterpetproject.org

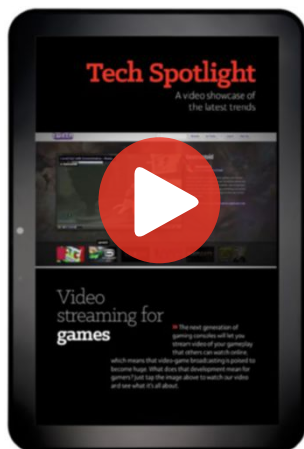


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HERE'S
HOW



Dig deep into new Windows 10 features

Windows 10 may still be in beta, but it already has some fun and handy, hidden new features worth exploring.

BY BRAD CHACOS

DESPITE STILL BEING very much an early preview, Windows 10 is already brimming with dozens of handy tweaks and tricks—and, because the operating is still in preview, a handful of those tricks unlocks powerful functionality hidden to everyday users.

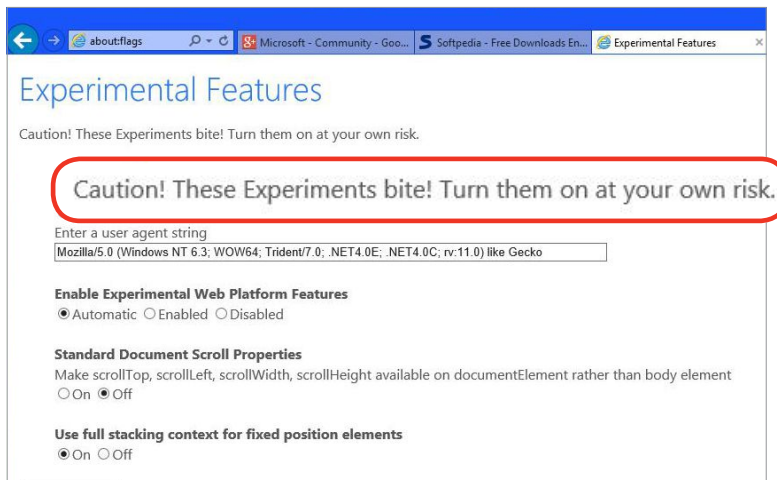
Others, though, simply let you mold some of Windows 10's new features into the shape you see fit. Here are some of the most useful Windows 10 tweaks, tricks, and tips we've found. Be warned: Some of these may break as the operating system evolves.

This is(n't quite) Sparta(n)

LET'S START BY unlocking one of those powerful new features. Microsoft's building a lightweight new browser for Windows 10: Project Spartan. And while Spartan isn't available in the latest Windows 10 builds yet, you can enable its experimental Edge rendering engine in Windows 10's Internet Explorer 11.

Just open IE11 and type **about:flags** in the address bar. In the page that appears, simply set "Experimental Web Platform Features" to *Enabled*, then restart the browser. Setting the "Custom User Agent" string to *Enabled* as well will trick websites that nerf the old IE engine into using Spartan Edge.

Windows'
Experimental
Features comes
with a warning.



The Edge engine is considerably faster than IE11's default engine in tests, but be warned: It's flagged as experimental for a reason.

Revamped clock and calendar

Let's activate Windows 10's sleek new clock and calendar. Here's how, as first discovered by Winbeta (winbeta.org). It requires a (simple) registry edit, so be sure to make a backup first (go.pcworld.com/regbackup).

Right-click on the Start button and select *Run*. In the window that appears, type **regedit** and then press *Enter*. Navigate through the file system to *HKEY_LOCAL_MACHINE > Software > Microsoft > Windows > CurrentVersion > ImmersiveShell*, then right-click in an empty portion of the main windows and select *New > DWORD (32-bit) Value*. Name it

UseWin32TrayClockExperience and boom! You're done. Just open the calendar from the taskbar as normal and bask in the sleek, new look.

Make Cortana's ears perk up

Cortana has finally made the leap to the PC in Windows 10, assuming many of the operating system's search functions, even though her first iteration could still use some polish. (That's what Previews are for!) But by default, she doesn't listen for your commands.

If you'd like to be able to just bark commands at your PC, open Cortana by clicking the search field in the taskbar and select the three-lined options menu in the upper-left corner. Select *Settings* from the list, then simply enable the *Let Cortana respond when you say 'Hey Cortana'* option. You'll need an active microphone for this to work, of course.

While you're poking around Cortana's options, you can dive into the Notebook menu to fine-tune what personal data Microsoft's digital assistant can access. However, like Google Now, Cortana's effectiveness



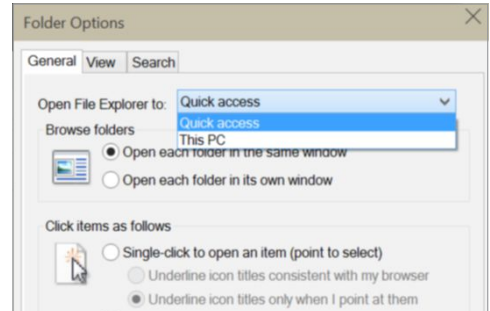
A simple registry edit will open the clock and calendar functions from the Taskbar.

is directly related to how much she knows about you.

Turn off File Explorer's Quick Access view

When you open File Explorer in Windows 10, it defaults to a new Quick Access view that shows your most frequently accessed folders and recently viewed files. I love it, personally, but if you'd rather File Explorer defaulted to the "This PC" view found in Windows 8, here's how.

Open File Explorer, then select *View > Options* from the Ribbon. A Folder Options window will open. Click the *Open File Explorer* drop-down menu at top, then select the *This PC* option. Click *OK* and you're done!



It's easy to turn off the Quick Access view.

Secret, powerful new command line tools

Windows 10 packs a slew of nifty new command line features, including—hallelujah!—the ability to copy and paste inside the command prompt with *Ctrl + C* and *Ctrl + V*.

```

C:\> Command Prompt
Microsoft Windows [Version 6.4.9841]
(c) 2014 Microsoft Corporation. All rights reserved.

C:\Users\Josip>dir
Volume in drive C has no label.
Volume Serial Number is CED4-4EED

Directory of C:\Users\Josip

2014-10-03 11:36 <DIR>          .
2014-10-03 11:36 <DIR>          ..
2014-10-03 11:31 <DIR>          Contacts
2014-10-03 11:47 <DIR>          Desktop
2014-10-03 11:31 <DIR>          Documents
2014-10-03 11:31 <DIR>          Downloads
2014-10-03 11:35 <DIR>          Favorites
2014-10-03 11:31 <DIR>          Links
2014-10-03 11:31 <DIR>          Music
2014-10-03 12:13 <DIR>          OneDrive
2014-10-03 11:31 <DIR>          Pictures
2014-10-03 11:31 <DIR>          Saved Games
2014-10-03 11:32 <DIR>          Searches

```

New command line features increase customization.

To activate the goodies, open the command prompt. Right-click its title bar, then select *Properties*. You can find and enable the new features under the *Experimental* tab.

Declutter your taskbar

Two of Windows 10's standout features are its Cortana search integration and newly added virtual desktop support—but they claim a sizeable chunk of your taskbar. If you don't care about either (or don't mind using *Windows key + Tab* to leap through virtual desktops), you can reclaim that onscreen real estate.

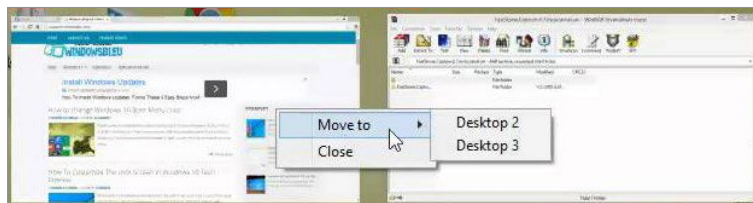
Everything starts by right-clicking an empty section of your taskbar. In the menu that appears, deselecting *Show Task View* eliminates the Task View (virtual desktop) icon, while selecting *Search > Disabled* removes Cortana's "Ask me anything" box.

Fresh keyboard shortcuts!

Windows 10 packs a handful of fresh keyboard shortcuts, all tied to newfound abilities inside the revamped operating system. There are many more than we can list here, so head over to PCWorld's guide to Windows 10's keyboard shortcuts (go.pcworld.com/w10keycuts) to learn all about them.

Move open programs between virtual desktops

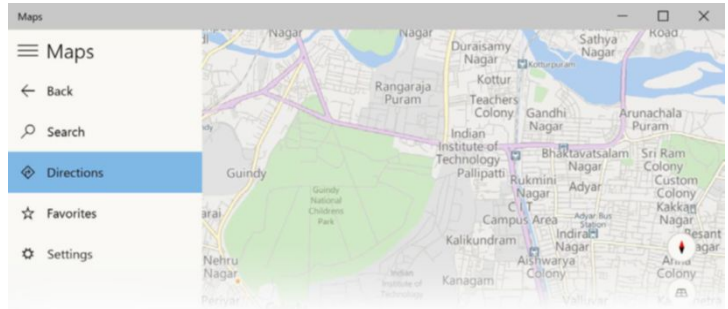
Virtual desktops let you segregate your open apps into discrete areas—literally multiple, virtualized versions of your PC's desktops. Switching between open virtual desktops is easy enough using *Task View* or *Windows key + Tab*, while *Alt + Tab* jumps you between open apps across



You can now
segregate your
open apps into
discrete areas

all desktops. There's also a way to actually shift an open app from one virtual desktop to another if you'd like to shuffle things around.

Simply open the virtual desktop housing the open app in question. Click the *Task View* button in your taskbar—it looks like two papers in front of one another—to bring up an overarching view of your open desktops as well as the open apps inside *this* virtual desktop. Right-click the program you'd like to move, then select *Move to > Desktop [desired virtual desktop number]*. Done!



...you'll be able to select which continent, then country whose offline map you'd like to download

Offline Maps

Speaking of apps, the revamped universal Maps app, like any maps tool worth using (and *unlike* the Windows 8 Maps app), packs an offline maps feature. Click the *Settings* (gear) icon in Maps, then select *Download or update maps* under the “Offline maps” header.

You'll be bounced to the Settings app, where you'll be able to select which continent, then country whose offline map you'd like to download. (If you're downloading a U.S. map, you'll also have to select which state you need.) Helpfully, Windows tells you how large the download will be before you start scraping the maps.

Disable the Photos app's auto-enhance

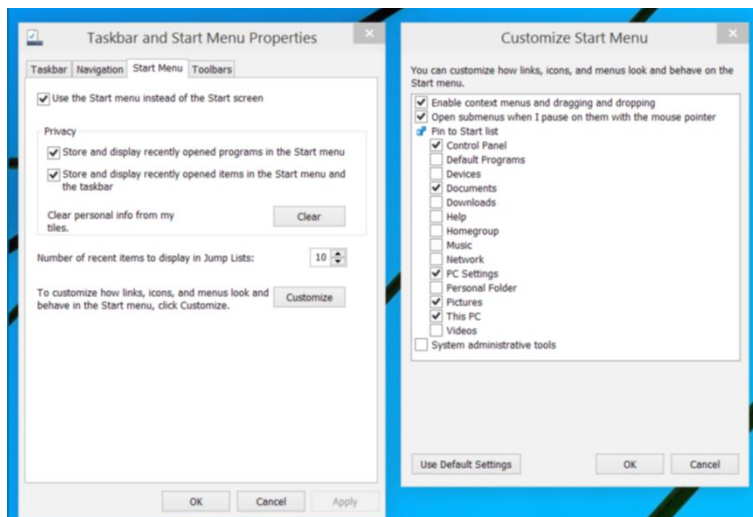
Windows 10's Photos app has been rebuilt as a universal app that scales across device types. It's still more than a bit buggy, but one notable feature already stands out: It will automatically auto-enhance your pictures for clarity and punch.

If you'd rather Photos left your pictures alone, open the app's *Settings*—symbolized by a gear in the left-hand column. Under the *Viewing & Editing* section, simply disable the “*Automatically enhance my photos when they can be improved*” option.

Enable tablet mode

Windows 10's Continuum, which dynamically switches from the traditional desktop to a more Metro-like interface when you're using a touchscreen, is supposed to kick into action when you connect or disconnect a keyboard from your Windows hybrid or tablet. But what if you're using a standard PC and just plain love full-screen apps and the Live-Tile-strewn Start screen, rather than the Start menu?

Easy! Activate tablet mode. Open up Windows 10's new *Action Center*—the small icon that looks like a comic-book word bubble in your system tray—and click the *Tablet Mode* button. It'll turn blue, the desktop will darken, and Cortana's desktop box will shrink to an icon to indicate you've made the switch. Now bask in the full-screen apps and Start menu, since that's obviously your thing.



Personalize both
the Taskbar and
Start Menu
interfaces.

Customize your Start menu

Finally, don't forget to make the Start menu your own. If you appreciate the blend of the traditional interface with the Live Tiles, note that you can right-click on any tile and select *Resize* to alter the tile's dimensions—just like on the Windows 8 Start screen.

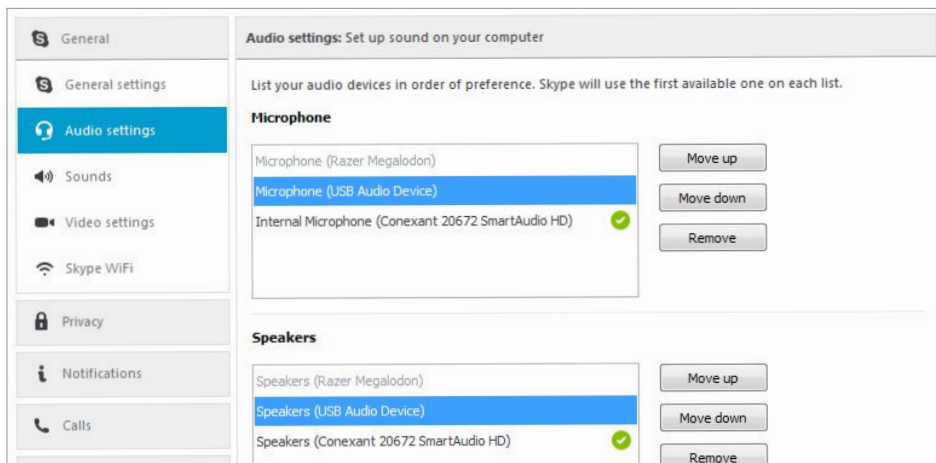
Alternatively, if you loathe Live Tiles and the Metro interface with the ferocity of a thousand suns, you can also right-click on every one of the defaults in the Start menu and select *Uninstall* to wipe them from your system. Repopulate them with desktop software of your choosing—you can right-click any app or program and select *Pin to Start*—and before you know it, it'll be like the Windows 7 Start menu all over again.

Expand the Start menu to full-screen

If you like the look of the full-screen Start menu but still rock a mouse and want to stick to windowed Metro apps, fear not: You can have your cake and eat it too. Simply open the Start menu, then click the *Expand Start* button in the upper-right corner to have it mimic the Windows 8 Start screen (and the picture in the previous slide) every time you click the Start button. The rest of the desktop continues to behave normally.

Try it yourself!

Still with me, and wondering how to get in on all this cutting-edge action yourself? Check out PCWorld's guide on how to install the Windows 10 Preview (go.pcworld.com/win10install) for all the nitty-gritty information you need to know to start using—or silencing—Cortana today. 🖱️



Five Skype Fails and how to fix them

BY CHRISTOPHER NULL

SKYPE IS AN essential business and communications tool, but it can also be a pesky one. Here's how to get its more annoying features under control.

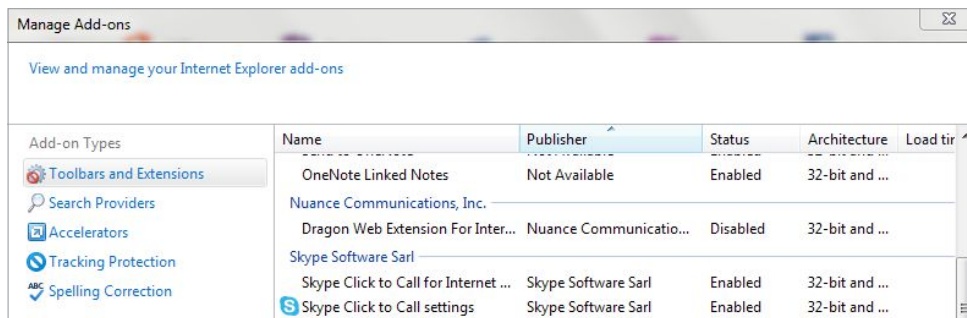
Skype can't seem to find my webcam, speakers, or microphone

1 One of the most common complaints with Skype is that it loses its connection to some essential component—either your camera, speakers, or microphone. While some of these problems can be traced to hardware problems, driver issues, or simple Windows errors that rebooting can fix, many are caused by Skype's own confusion.

Your first troubleshooting stop is under *Tools > Options*. Click *Audio Settings*, then *Show advanced options*. Here you'll find a list of all the

The advanced settings system in Skype can quickly fix those "no microphone detected" problems.

audio devices your computer has ever utilized. If you have, say, a headset that you occasionally plug in, it will show up here, grayed out. Problems occur when Skype accidentally attempts to use this device even if it isn't plugged in. You'll find a similar drop-down under Video Settings.



Skype replaces phone numbers in your web browser with annoying 'Click to Call' buttons

Disabling Skype's

Click to Call feature may require delving into your web browser settings

2 This is a frequently overlooked feature that is installed by default, but it can be undone in a few steps.

First, uninstall *Skype Click to Call*, in the Windows Control Panel. Next, check your browser Add-Ons. If you see Skype Click to Call listed (there may be multiple items), disable them. Finally, within Skype visit *Tools > Options > Advanced* and uncheck the top two boxes to keep Skype out of your hair

If Skype's your only voice-calling solution, it might be handy to replace phone numbers on websites with links that you can click to initiate a Skype session. For the rest of us, it's needlessly intrusive and makes even the simple task of copying and pasting a phone number difficult.

Call quality is terrible

3 Chances are this isn't really Skype's fault. Your Wi-Fi is slow, you're too far from the router, or there's congestion on your network. Attack these issues methodically. Assuming you're connecting wirelessly, move as close to your router as possible. (It

should go without saying that connecting over Wi-Fi will be much more seamless than connecting over a cellular data connection.)


Another key tip: Once you park your laptop, tablet, or phone, keep it still. After you find a spot with good coverage, don't touch your device any more. This helps stabilize your wireless connection so Skype can work with a less erratic amount of bandwidth, and it also improves quality by optimizing video compression. Because the background is now static instead of in motion, fewer pixels will be changing in the image, which means more bandwidth is available to the important part of the image. Similarly, ensure other computers on the network aren't hogging bandwidth. If someone's streaming Netflix in another room, your Skype connection will suffer.

Unused Skype credits can vanish if they aren't used at least once every 180 days

4

If you've ever made a call from Skype to a landline, you probably have a few dollars in credits lying around. But if you don't use them at least once every 180 days, Skype inexplicably "deactivates" your credits. It doesn't delete those credits, however. It just hides them in a virtual back room.

To get them back, look for a "*Reactivate credit*" button where your balance used to appear. If it's not there, visit this webpage (go.pcworld.com/skypereactivate) to reactivate the credits manually. Signing in to your Skype account is required. (You can also check your balance and the date at which your credits will go dark on this page.)

 Reactivate Skype Credit

Your Balance

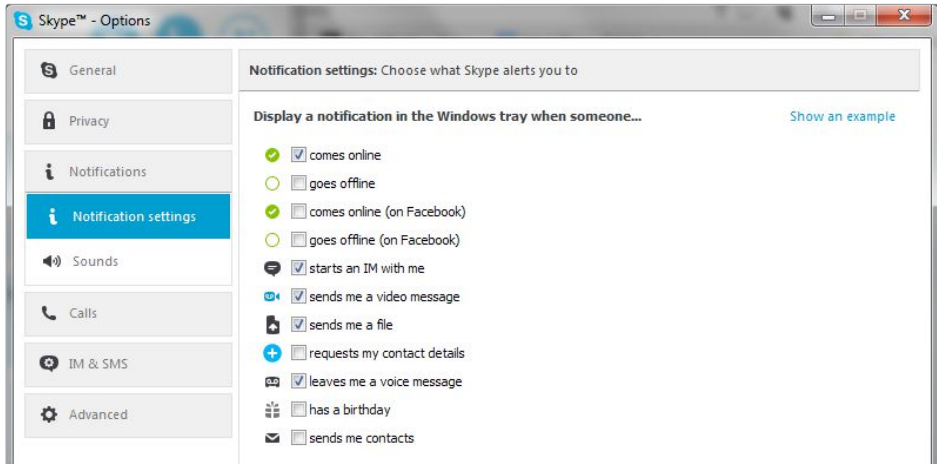
\$6.19 is active until **March 29, 2015**

Your balance remains active for 180 days after your last call to a landline or Skype.

You can use Skype's credit reactivation system to check your balance and find out when credits will be deactivated.

Skype erupts with noisy notifications for everything

5 By default, Skype is a noisy companion. Skype will alert you with a chirp or beep and a text alert when just about anything happens, even when it's the birthday of one of your contacts.



Tone things down by visiting *Tools > Options > Notifications > Notification settings* and unchecking the options you don't want to hear about. To quiet Skype down further, click the *Sounds* tab and uncheck any additional options you don't want, or click "*Mute all sounds*" to shush Skype permanently. 🔇

If you don't need to keep track of birthdays through Skype, get rid of the alerts here.

Typing tips every mobile user should know

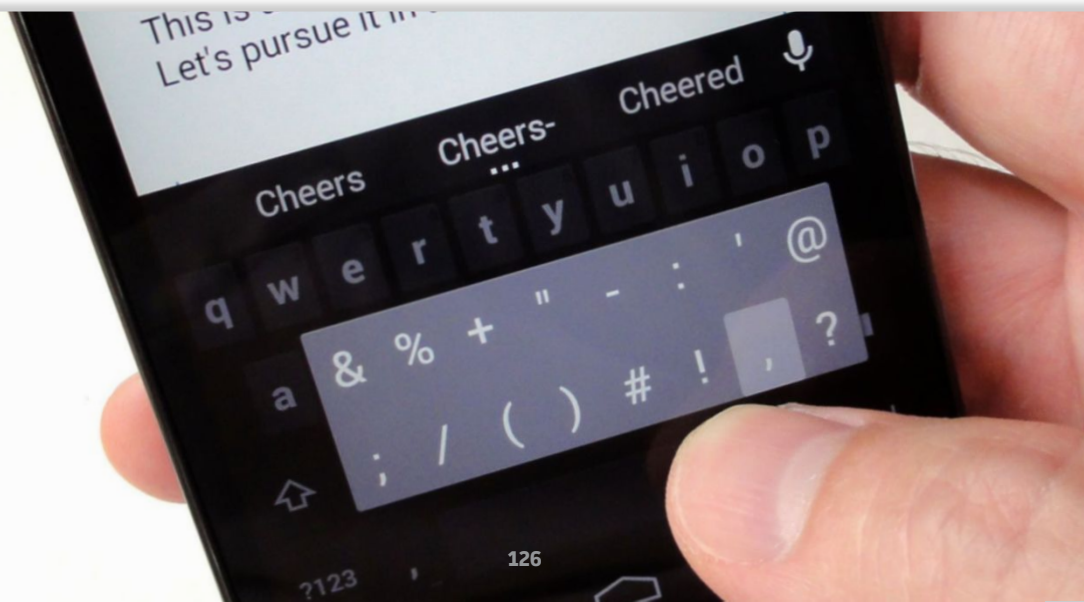
BY BEN PATTERSON

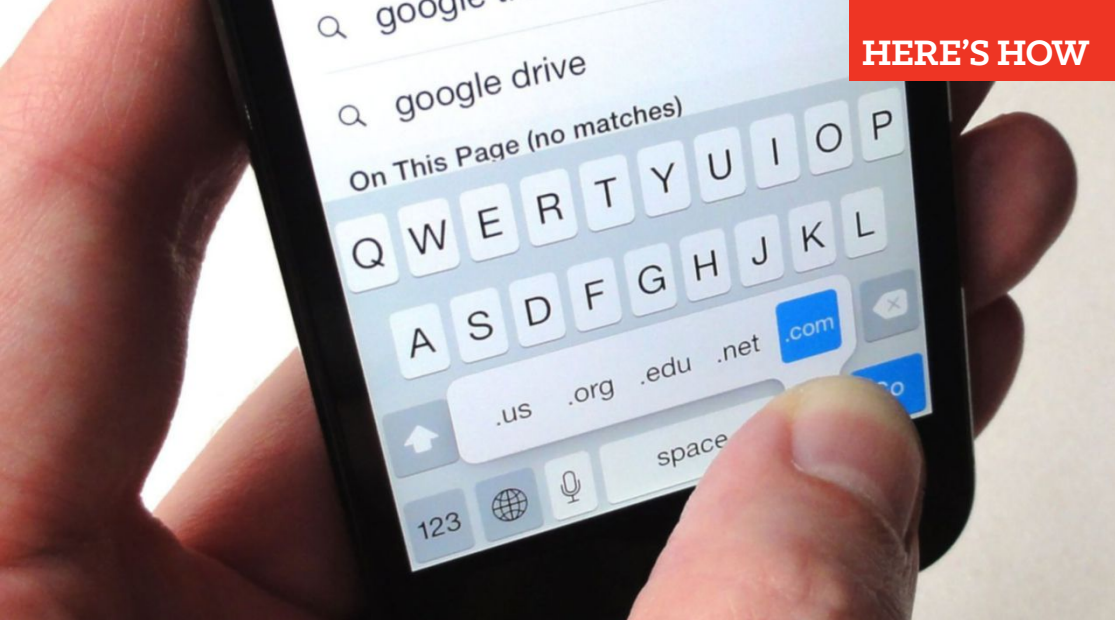
WISH IT WERE a little easier to type in ALL CAPS on your Android or iPhone, or ever get stumped while looking for the em dash? What about typing letters with accent marks, or dealing with cumbersome URLs? Or maybe you're just hankering for an alternative to tapping on a slippery glass screen.

Read on for ways to make typing on your iPhone, iPad, or Android device a little easier, from how to turn on "caps lock" to a simple shortcut to the exclamation mark.

“.com” made easy (iOS)

WANT TO TYPE a URL directly into the address bar in Safari (on iOS)





or Chrome (for Android)? Don't bother with laboriously tapping in ".com" or ".net".

Instead, just tap and hold the "." key; when you do, a pop-up balloon will reveal a series of shortcuts from ".com" to ".us".

Lock the Caps key (Android and iOS)

Wondering why there's no Caps Lock key on the keyboard of your Android or iOS device? Well, there is, actually—it's just well hidden.

See the Shift key? Just double-tap it. When you do, a little horizontal line will appear near the bottom of the Shift key, indicating that you're in ALL CAPS mode.

Swipe to type (Android and iOS)

SICK TO DEATH of painstakingly tapping out messages on your Android or iPhone touchscreen? Here's a nifty trick: swiping to type.

The concept is simple: Rather than tapping each individual key when typing a word, swipe-to-type keyboards let you slide your fingertip from one key to the next.

As your finger loops around the keys, your phone predicts the work you're trying to type—er, swipe.

Never type

dot-com or dot-org or dot-lots of things with this iOS trick.

Sound weird? Indeed, swiping to type does take some getting used to, but it'll become second nature with practice.

The “stock” Android keyboard has its own built-in “swipe to type” feature. Just tap *Settings* ► *Language & Input*, tap the *Settings* icon next to Google Keyboard, then tap the checkbox next to *Enable gesture typing*.

There are also plenty of third-party, swipe to type-ready keyboards in the Google Play store, with Swype being the most notable.

The standard iOS keyboard lacked the swipe-to-type capabilities of Android until iOS 8 came along. That update finally brought third-party keypads—particularly Swype—to the iPhone and iPad.

Accent marks (Android and iOS)

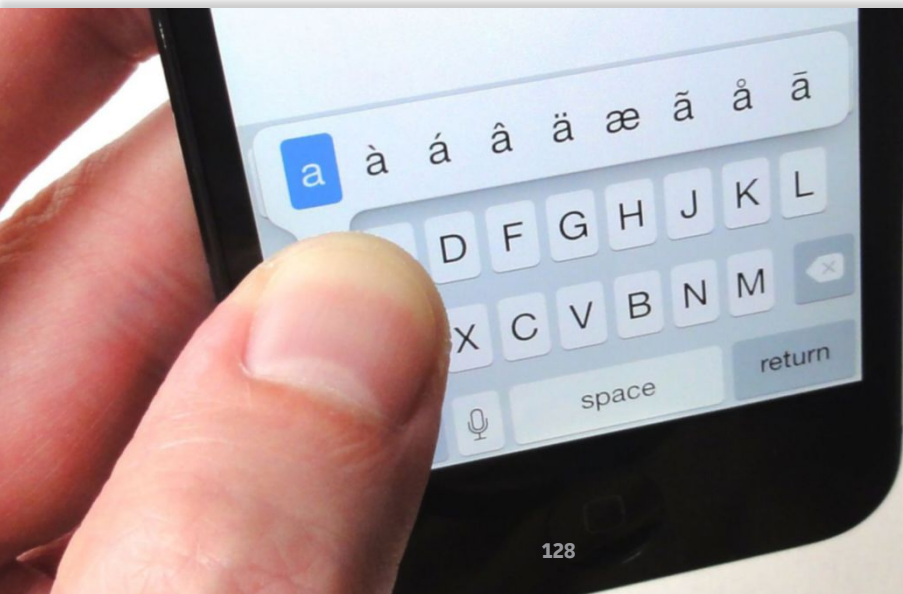
Don't get caught skipping the accent grave in “voilà” while typing that email on your iPhone or Android phone.

You can access a generous portion of accent marks—acute, grave, circumflex, and otherwise—by tapping and holding a letter key (like “a”).

Em dash & bullets (Android and iOS)

I've rarely met an em dash I haven't liked—and come to think of it, I'm

Impress your
international
friends with
your canny use
of accents .





also a sucker for bulleted lists. How does someone like me survive typing on an Android phone or iPhone? Easy.

Tap and hold the dash key to reveal even more dashing buttons, including the em dash, a bullet key, and the indispensable underscore.

Bonus tip: Try tapping and holding other symbol keys. For example, you'll find "curly" quotes by tapping and holding the quote key.

Tapping and holding symbol keys will yield buried typing treasure.

You're so money (Android and iOS)

Want to type the currency symbols for the yen (¥), the euro (€), or the pound (£)? Simple.

Just tap and hold the key for the dollar sign. When you do, a pop-up bubble will display a series of additional money-minded options.

Talk instead of type (Android & iOS)

It's easy to forget that both iOS and Android phones will take dictation whenever you're not in the mood to type.

Just tap the little microphone icon on the keyboard. For iOS, it's to the left of the space bar, while on Android phones it's sitting in the top-right corner (assuming you're using the "stock" Android keyboard).

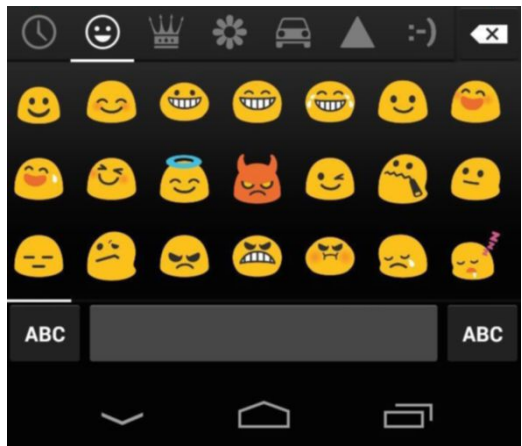
Emoticons galore (Android & iOS)

What's a text message without a smiley? Good question. Luckily, both the Android and iOS keyboards come with more emoji (a.k.a. emoticons) than you can shake a stick at.

On the stock Android keyboard, tap and hold the “Done” or carriage-return key in the bottom-right corner of the keypad, then slide your finger over the pop-up emoticon button.

You'll see the first of hundreds of available emoticons—just keep swiping to see the dizzying number of variations and categories.


For iOS, you'll first need to enable the emoji keyboard. Tap *Settings* ► *General* ► *Keyboard*, tap *Keyboard* (again), then check to see if “Emoji” is in the list of installed keyboards. Not there? Then tap “Add New Keyboard” and find Emoji in the list. Now head to the keyboard, tap the key with the globe icon, and feast your eyes on all the emoticons.



A shortcut for oft-used symbol keys (Android)

On the stock Android keyboard, there's no need to flip to an alternate set of keys to get to the exclamation mark, the percent sign, or other everyday symbols. (See the first image to this article.)

Instead, just tap and hold the period key. When you do, a pop-up of more than a dozen common symbols will appear—everything from the ampersand key (&) to the question mark.

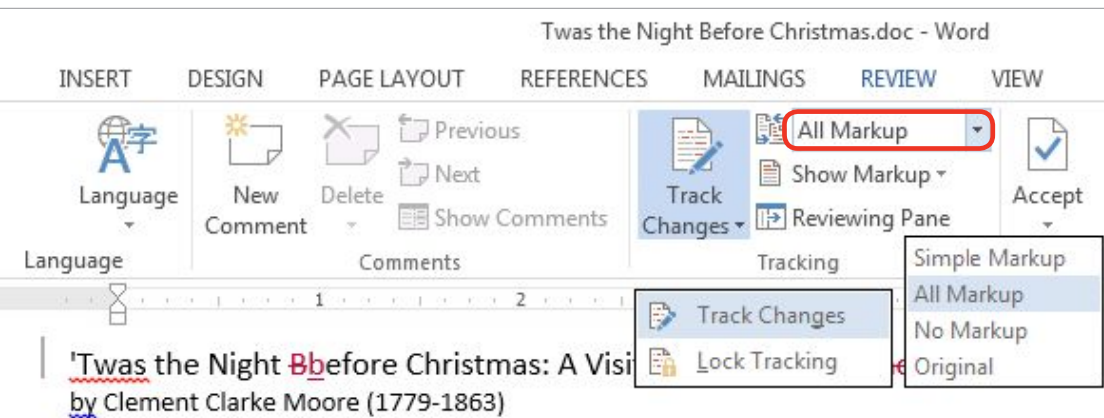
For comprehensive coverage of the Android ecosystem, visit Greenbot.com. 



Track changes in Microsoft Word without going insane

BY JD SARTAIN

IF YOU'VE EVER opened a document that had more strikeouts than a beer-league ballplayer, you're familiar with Microsoft Word's "track changes" feature. It's one of the most useful tools for collaboration, but in practice a marked-up document can quickly overwhelm with its tangle of additions, deletions, and comments all displayed in multiple colors—



one for each contributor. It's enough to make you want to put a big red "X" on the whole thing.

Before you do, read through our guide to sanely navigating a multi-authored document using track changes. We're confident that by the time you're done you'll wonder how you ever lived without it.

Review, accept, and reject changes

Once you've opened the document you'll be reviewing, select the *Review* tab, click the *Track Changes* button, then select *Track Changes* from the list box to turn on this feature. When the *All Markup* option is selected, the tracked document displays with all changes by all users, with each users' edits in a different color. Also, notice the gray vertical track lines in the left margin which indicate a change on the adjacent line.

All those visible changes can be distracting when you're reading a document. Fortunately, Word 2013 offers an additional option called Simple Markup, which is now the default choice when you turn on Track Changes. Simple Markup just displays a red vertical track line adjacent to each line of text with changes. As you read through the

In Microsoft Word 2013, choose All Markup to see every contributor's changes.

text, click the track line to toggle between All Markup (line turns gray) and Simple Markup (line turns red). Now you can review the document with the multi-colored edits on or off as you prefer.

In fact, this is the quickest and easiest way to get through the process. Skim the document toggling between Simple Markup and All Markup. When you see a change you don't like, place your cursor anywhere on the marked change, click *Reject*, then choose *Reject This Change* from the list box. When finished, click *Accept > Accept All Changes* to globally accept all the remaining edits.

If for some reason you don't agree with most of your colleagues' changes, click *Accept* on the ones you want to keep and choose *Accept This Change* from the list box. When finished, choose *Reject All Changes* to globally reject all the remaining edits.












When you're finished, save the document with a new filename to denote the modified version. This is particularly important when collaborating with a large group. To turn off track changes click the *Track Changes* button again, and it changes from blue back to white.

Click the track lines to toggle between Simple Markup and All Markup.

Adding and managing comments

When you're reviewing a collaborative document, comments are

Twas the Night Before Christmas.doc - Word

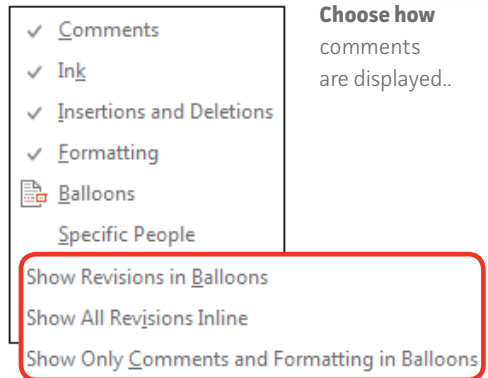
INSERT	DESIGN	PAGE LAYOUT	REFERENCES	MAILINGS	REVIEW	VIEW
 Language Language	 New Comment	 Delete	 Previous  Next  Show Comments	 Track Changes	<div style="display: flex; flex-direction: column; align-items: center;"> <div style="display: flex; align-items: center;">  <div style="margin-left: 5px;"> All Markup Show Markup ▾ Reviewing Pane </div> </div> <div style="margin-top: 10px;">  Accept </div> </div>	
				<div style="display: flex; flex-direction: column; align-items: center;"> <div style="display: flex; align-items: center;">  <div style="margin-left: 5px;"> Track Changes Lock Tracking </div> </div> </div>	<div style="border: 1px solid black; padding: 5px; width: 150px;"> <div style="display: flex; flex-direction: column; align-items: center;"> <div style="display: flex; align-items: center;">  <div style="margin-left: 5px;"> Simple Markup </div> </div> <div style="margin-top: 5px;"> All Markup No Markup Original </div> </div> </div>	

1 'Twas the Night Bbefore Christmas: A Visi
 by Clement Clarke Moore (1779-1863)

often necessary to explain or suggest an edit. Comments can also be used to issue formatting requests to the layout team, graphic design crew, or printer.

To add comments, first determine how you want them displayed. The options are *Show Revisions in Balloons*, which displays comments in a balloon to the right of the document); *Show All Revisions Inline*, which highlights the text inside the paragraph between vertical lines followed by the initials of the editor; and *Show Only Comments and Formatting in Balloons*, which displays the comment text on the right connected by dotted lines. Click the preferred option (you can change them at any time), and you're ready to add comments.

Next, highlight the text where you want the comment inserted, then click the *New Comment* button under the Review tab. Word opens a Review Screen panel on the right side of the page with a vertical line that connects your selected text to a comments box. Enter your comments in it, then press the *Esc* key to exit when finished.



To edit or reply to another user's comment, click the appropriate balloon on the right side of the page adjacent to the highlighted text. To edit, just make the changes and click the X to close. To reply, click the page curl icon at the top right, enter your reply, then click the X to close.

After the comments are reviewed, you can easily delete them with a few clicks. Toggle the *Show Comments* button until the balloons appear on the right. Right-click the comment balloon you want deleted. When the comment box appears, place your cursor anywhere on the commented text, click the *Delete* button, and then select *Delete* from the list box. If you want to wait until you've reviewed all the comments, click the *Delete button*, then select *Delete All Comments in Document* from the list box. They're all removed in one easy step. 🔥



Wi-Fi triage: Five common solutions to wireless woes



WI-FI IS THE most wonderful home convenience—except for when it isn't. That's why it's a good idea to have a mental checklist on hand for common issues that might be causing the problem when your Wi-Fi checks out.

Everybody has their own favorite way of handling Wi-Fi problems, but here are mine.

Reboot your router

The simplest reason is often the most likely cause of problems. If your router's lights are not displayed in the usual order, turn off your router, wait five to fifteen seconds, and turn it back on again.

This is also a good time to ensure that all your cables are connected correctly. As an alternative to simply switching the router on and off,

first try disconnecting it from the power source. Now take out the cord that feeds into your router from the wall to deliver your Internet connection, such as a TV cable, ethernet cable, or telephone cord. Wait a few seconds and power the router on. Then wait another five seconds or so before connecting the Internet cable to your router again.

Too hot to handle

During this time you should also check to see if your router feels particularly hot. If it does, your router might have an overheating problem. Check to see that your router isn't up against an obstruction that could be blocking its vents.

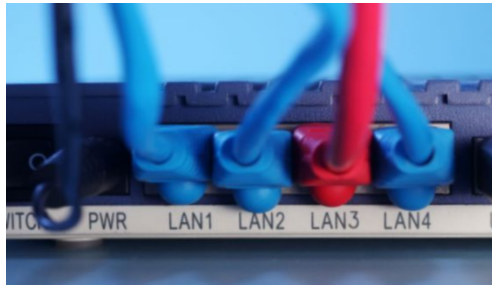
Maybe you placed it on another piece of tech that also heats up, or perhaps the router's on a rug where it can't properly cool down. Routers, like PCs and gaming consoles, are complicated electronics that need room to breathe.

No connection elsewhere

If your connection starts dropping only in a part of the house where the signal once came through loud and clear, there are a few things you can check.

First, if your router has physical antennas make sure they are pointing straight up for the best possible coverage area. If your router is near a possible obstruction like a metal filing cabinet, move the router to another part of the room or try elevating it a bit more.

Finally, you might try changing your router's channel as other routers around you may be muscling in on your home network's signal. For more on Wi-Fi channels, check out Essentials tools for Wi-Fi headaches ([go.
pcworld.com/wifitools](https://www.pcmag.com/uk/go/pcworld.com/wifitools)).



**Are all those
cables secured
properly?**

Lights are on, but nobody's home

Your router's lights show everything is working properly, but you can't

see your Wi-Fi connection listed on your laptop or smartphone. What gives?

Did you rename your router to something more personal like NoFreeloading? If so, your hardware may have been reset without you realizing it. This can happen due to a random anomaly, a firmware bug, curious children, or even your ISP.

Look at the bottom or the back of your router for a sticker with its original name—called the “service set identifier” (SSID)—such as LINKSYS WRTXYZ. Note the original password that’s also on the sticker.

Now check the Wi-Fi connections listed on your device. Is your router’s original name there? If you see it, connect with your original password. If that works, then login in to the admin panel and then change your router’s name back to whatever snappy title it had before. Just don’t forget to change the default password as well.

More security minded folks may prefer to use a PC to connect to their router directly with a cable and reset the name from there. It’s possible that you’re router is not the only one named NETGEAR in the vicinity.

It’s entirely possible that you’re router is not the only one named NETGEAR in the vicinity.

To reset or not to reset

If all else fails, you may have to reset your router to its default settings. This should always be the last resort since resetting a router can have unintended consequences. Some connections, for example, may need to be reset on your service provider’s end—requiring a call to your ISP. Resetting your router will also wipe out any personalized settings you had, such as your SSID, control panel password, and network connection password.

Look for a button on the back or underside of your router. Typically these are small holes that contain a button within that requires a paper clip or some other small instrument to press. Once you’ve hit the reset button, wait a few seconds before releasing it and see if that fixes your problem.

If all else fails, you may have a hardware failure on your hands.

Looking for more Wi-Fi tips? Check out Top 10 home Wi-Fi network errors and how to fix them (go.pcworld.com/wiferrors). 🔌



Why you might still want an optical drive

Don Semler asked “Why are so many new laptops being offered without optical drives?”

Optical drives, that can read and write CDs, DVDs, and sometimes Blu-ray discs, have been an important part of the PC universe for a long time. But there's less and less need for them. I haven't received software on discs in years—and in my job, I have to look a lot of software. I download it all from the Internet. Most users download

and stream music and movies these days rather than buy them on a shiny five-inch disc.


PC manufacturers have good reasons not to include the drives. Unlike CPUs and SSDs, optical drives can't shrink much. They therefore add bulk to laptops, and nobody wants a bulky laptop.

But in my opinion, they shouldn't disappear entirely. We need ways to access older media. And because they're read-only, CDs and DVDs just might prove in the long run to be an excellent archival format—if you use the right discs (go.pcworld.com/archivefiles). But that will only be the case if drives remain available.

You can buy an external optical drive for less than \$40, and use it only when you're at home.

More advantages

Optical drives have other advantages. Some programs, such as VeraCrypt, still require them for emergency boot tools. I still occasionally get music on CDs—as gifts or when I buy them directly from the artist at a concert. And when I do get an audio CD, the first thing I want to do with it is rip it to MP3s.

But what if you want a small, light laptop and an optical drive? Make the drive detachable. You can buy an external optical drive for less than \$40 and use it only when you're at home. That's what I do. 

Tech Spotlight

A video showcase of
the latest trends



Watch the
video at
[go.pcworld.
com/flex2](http://go.pcworld.com/flex2)



LG's G Flex 2: curved phones reconsidered

» LG's G Flex 2 is a curved phone finally worth trying. It's a massive improvement over its predecessor, and it sets the precedent for what curved phones should be: both high quality and comfortable to hold, with features that mirror those of other flagship phones.